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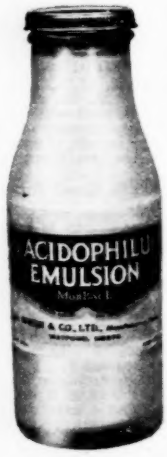

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FELLOW OF THE COLLEGE; SURGEON TO OUT-PATIENTS, ST. THOMAS'S HOSPITAL; ASSISTANT SURGEON TO THE CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS.

ALTHOUGH notable advances have been made in the surgical treatment of inflammatory conditions affecting the bile passages and in our knowledge of the pathological changes at work, it must be admitted that there is still room for improvement, and this fact leads us to consider in what manner the results of our treatment are unsatisfactory and how this failure may possibly be remedied.

Before turning definitely to the subject of treatment there are certain points in connexion with the anatomy and physiology of the gall-bladder which should be borne in mind as well as some established facts concerning the pathology of inflammation in the biliary tract.

ANATOMY AND PHYSIOLOGY OF GALL-BLADDER.

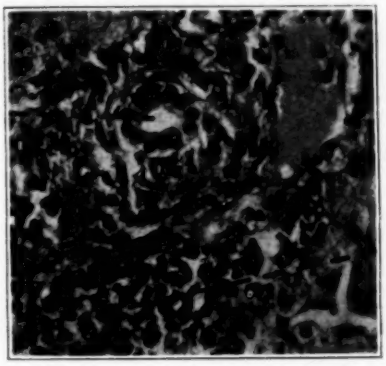
The gall-bladder, in common with the rest of the biliary apparatus, is developed as a diverticulum from the duodenum and possesses certain points of resemblance to it in structure and in function. The under surface of the body of the gall-bladder is in contact with the upper part of the duodenum and adjacent to the pyloric portion of the stomach. The neck and cystic duct pursue an S-shaped course toward the portal fissure, and the mucous membrane within this portion is thrown into from 5 to 12 concentric folds, the spiral valve of Heister. Mentzer,[1] of the Mayo Foundation, in an extensive study of its mechanism, could find no evidence of valvular action—that is to say, bile could pass with equal freedom in either direction—and Keith has pointed out that it is the very reverse of a valve, being an ingenious device to prevent any obstruction to inflow or egress consequent on kinking at the neck. The mucous membrane in the interior of the gall-bladder proper is thrown into numerous folds covered by a single layer of columnar epithelium and, as Boyd [2] has shown, these folds are so arranged that, on section, they appear as villi and may be spoken of as such, although strictly speaking not so, and further that this structure is suggestive of absorption. This absorptive power appears to be selective for water, salts, lipoids, and probably cholesterol.

Halpert,[3] working at the Johns Hopkins Hospital, has drawn attention to the fact that the muscle and elastic tissue of the organ resemble the muscularis mucosæ of the gut and suggests that they have a similar function—namely, to throw the mucosa into folds—and Boyden,[4] of Chicago, has drawn attention to the remarkable apparent increase in thickness of its wall consequent upon collapse of the organ by contrast with the condition it presents when distended. This point I shall refer to again later. Lastly, Kodama,[5] working with Graham, in a study of the lymphatic drainage of the gall-bladder, has shown that there is free communication between its lymphatics and those of the adjacent liver, the bile-ducts, the upper end of the duodenum, and the surface of the pancreas. The various activities of the intact gall-bladder are associated closely with the sphincter of the common bile-duct or sphincter of Oddi. It has been stated that in animals in which the gall-bladder is lacking, the sphincter is inadequate, and Judd and Mann [6] have suggested that this is so in the human subject after cholecystectomy, owing to increased pressure in the common bile-duct.

PATHOLOGY.

In considering the pathological changes of inflammation in the biliary tract it is convenient to include cholelithiasis with cholecystitis, for in cholecystitis calculus formation appears to be inevitable sooner or later, and in the vast majority of cases of cholelithiasis there is definite evidence of infection even if we allow that it is possible for a solitary stone to form in the absence of infection, although D. P. D. Wilkie [7] has recently produced evidence against such a process.

FIG. 1.



Human liver from a case of gall-stones showing a portal sheath with marked round-celled infiltration. B.-d. = bile-duct R.-c.i. = round-celled infiltration.

The pathological gall-bladder presents us with several problems which must be overcome if treatment is to achieve the best results. Firstly, it presents itself as a focus of infection, secondly as a factory of calculi, and thirdly as a potential site of carcinoma. To take these points in more detail, the gall-bladder may present itself to us during an attack of acute inflammation—in which event it forms one variety of acute intraperitoneal catastrophe or as the site of chronic infection it may affect other parts of the biliary tract or provide a focus of generalised infection. It is well established that the gall-bladder when acutely inflamed compares very favourably with other intraperitoneal viscera—that is to say, peritonitis of any severity is rare—and that after an attack of acute inflammation under favourable circumstances the organ can return to almost its normal condition. The presence of fibrosis in the wall of the bladder need not necessarily interfere with its function any more than the scar of a whitlow need interfere with the function of a digit, or prove any greater argument for its removal. Unfortunately, however, in the case of such a cul-de-sac as the gall-bladder there is a tendency for the resultant fibrous tissue or associated calculi to interfere with function, producing stagnation and persistent infection. This infection is particularly marked in the outer coats, probably owing to the antiseptic properties of the bile in contact with the gall-bladder mucosa, as Rosenow [8] and A. L. Wilkie [9] have shown. The effects of this infection are by no means limited to the gall-bladder, as might indeed be presupposed from a knowledge of its lymphatic drainage, and thus we find in many—and if we accept some authorities in all—cases of cholecystitis changes in other parts of the biliary tract. In the liver, especially that part adjacent to the gall-bladder, but also widespread in the hepatic portal sheaths as stressed by Graham [10] and by Judd [11] and evidenced macroscopically in many cases by scarring on the surface of the liver;

in the bile-ducts as pointed out by Burden [12] and affecting the pancreas as shown by Deaver and Sweet [13] and by Graham.[14] One might point out in this connexion that little information is extant about the fate of these associated lesions following cholecystectomy. How common infective changes are outside the gall-bladder itself is shown by the fact that in 281 cases of cholelithiasis which I [15] investigated and in which stones were limited to the gall-bladder jaundice occurred at some stage in 36 per cent. Fig. 1 shows well-marked infective changes in the hepatic portal sheaths in a subject suffering from stones limited to the gall-bladder and treated by cholecystectomy.

The actual path of infection to the biliary tract has been the subject of much research and discussion, and it appears that the lymphatic route and the hæmatogenous, as pointed out by Moynihan[16] and D. P. D. Wilkie,[7] are the most usual. But Moynihan has called attention to the additional possibility of direct infection up the common duct in the presence of achlorhydria with consequent increase of intestinal flora.

When we come to consider the gall-bladder as a factory of calculi we find again that this point is bound up with the question of infection. It is probable that all calculi, even the solitary stone, are the product of inflammatory changes. However, if stasis is prevented and free drainage is provided, calculus formation should prove impossible owing to the prevention of cholesterol accumulation and the prompt removal of biliary grit even if formed. This is important, for such particles are capable of increase in size and the production of obstruction throughout the biliary tract.

The last fact in the pathology of the gall-bladder, to which I shall refer, is that it is a potential site of carcinoma; but this seems to be so definitely associated with the presence of antecedent inflammation and calculus formation that if chronic irritation is avoided it is unlikely to occur and in actual fact carcinoma of the gall-bladder is not as common as is usually supposed.

The treatment of cholecystitis, then, must consist in abolition of persistent infection within the biliary tract—though not necessarily in abolition of the aftermath of infection—and in the removal of calculi and the prevention of further calculus formation. By dealing with these two points the possibility of carcinoma will be avoided.

TREATMENT.

In the treatment of cholecystitis I think there is general agreement that it is only by surgical intervention, in all but the mildest cases, that we can hope to give material benefit, and surgical treatment has consisted, speaking generally, of draining or removing the gall-bladder.

Drainage of the gall-bladder, or cholecystostomy, was the first operation undertaken and for a time enjoyed an uninterrupted vogue. Let us consider how it deals with the problems I have discussed and in what ways it fails to do so.

The inevitable drawback to the operation is that it is a purely temporary measure. By draining an inflammatory focus the operation relieves congestion and stasis, makes possible the removal of calculi, and, if the cystic duct is still patent, drains for a time the biliary tract, having a beneficial effect on associated cholangitis and retention of biliary excretion. Once the fistula closes, however, it leaves, as a rule, a gall-bladder with the factors that caused the original symptoms still operative, so that in many cases symptoms of greater or less severity recur, produced by persistent infection, or by fresh calculi. If when drainage is carried out the cystic duct has been obliterated completely, a mucous fistula will almost certainly be the result, and this will not heal without further operation. However, it must be admitted that, provided the cystic duct is patent, during the period of drainage the effect of the operation is good. These points are brought out by the following statistics: Taking 174 cases treated by cholecystostomy in St. Thomas's Hospital in the years 1911–28 inclusive, and in which the after-history could be ascertained, 49 per cent. remain cured up to date, 22 per cent. relieved, that is to say, benefited but still suffering some digestive disturbance, and 29 per cent. must be accounted failures. Of these unsatisfactory cases 35 have re-entered the hospital for further operative treatment, the secondary operations revealing the following conditions: Acute cholecystitis 3 cases, 1 without stones, 1 with stones in the gall-bladder, and 1 with stones in bile-duct; chronic cholecystitis 31 cases, 8 without stones, 14 with stones in the gall-bladder, 7 with stones in the common bile-duct, and 2 with pancreatitis; carcinoma of the gall-bladder, 1 case.

It was largely owing to the very high percentage of unsatisfactory results following cholecystostomy, to the more intensive study of the underlying pathology, and to the appreciation of the fact that cholecystectomy in skilled hands is no more dangerous, that cholecystectomy became the operation of choice. In confirmation of the statement that cholecystectomy is no more dangerous than cholecystostomy, the following figures at St. Thomas's Hospital, though admittedly few in number, may be given. 146 cases of cholecystostomy, amongst which acute cholecystitis was present in 16 per cent. and gross chronic cholecystitis—that is to say, of such severity as to render the operation technically difficult—in 56 per cent. showed a mortality of 9 per cent., whilst 80 cases treated by cholecystectomy, amongst which acute cholecystitis was present in 23 per cent. and gross chronic cholecystitis in 75 per cent., showed a mortality of 6 per cent., and a further series of 97 cholecystostomies and 315 cholecystectomies show a similar result. It is of interest to note the complete reversal of the ratio of frequency of the two operations in late years.

Cholecystectomy deals radically with the possibilities of a focus of chronic infection, and of a factory of calculi, but unfortunately, in many cases, we shall be locking the stable door after the horse has gone, and the evils produced by the gall-bladder while in situ will remain. Mere removal of the gall-bladder may do little to remedy associated cholangitis or pancreatitis, and thus we find after cholecystectomy a definite proportion of unsatisfactory results. Thus 176 cases treated by cholecystectomy show 73 per cent. as cured, 16 per cent. as relieved, and 11 per cent. as failures. This percentage is composed of cases of pancreatitis acute and chronic, of obstructive jaundice due to inflammation or calculi, and of biliary colic. Similar figures are seconded by Whipple, by Müller,[17] and by Rowlands.[18] The figures for cholecystectomy show a definite improvement over those for cholecystostomy, and are comparable if either operation is combined with exploration of the common bile-duct. The actual cause of failure in these cases, then, may be the presence of stones in the bile-ducts, stenosis of the ducts, or persistent cholangitis and pancreatitis, and it follows that when any of these conditions are found or suspected at the original operation, very serious consideration must be given to the advisability of removing the gall-bladder. It has been shown by Burden,[12] and by Judd and Counsellor, all of the Mayo Clinic,[19] that cholecystitis is nearly always accompanied by cholangitis of the chronic inflammatory type which is ultimately productive of stricture and is likely to influence the result of operations for the relief of common duct obstruction, and explains the frequency with which incomplete intermittent obstruction follows plastic operations for the relief of strictures of the bile-ducts (see Fig. 1). Cases manifesting recurrence of symptoms after cholecystectomy constitute one of the most difficult problems in surgery. As a result of impaired function of the liver the patients are seldom good operative risks; the presence of obstructive jaundice introduces the danger of serious hæmorrhage, and the technical difficulties of identifying the diseased structures may be very great owing to the presence of adhesions and

the fact that the natural signpost to the ducts—namely' the gall-bladder—is lacking. When ultimately the knot is unravelled the problem of what can or what ought to be done has still to be faced. In such cases Walters,[20] from his work in the Mayo Clinic, considers that the successful treatment of strictures in the bile-ducts depends on the presence of enough duct on the proximal side of the stricture to permit of accurate anastomosis to an opening in the duodenum as well as that a minimal amount of infection should exist in the biliary passages, but that, in view of the frequent infection present, recurrent symptoms of intermittent obstruction are likely. Judd [21] agrees with these views, and points out that in certain cases in which the segment distal to the stricture is located readily and appears healthy, end-to-end anastomosis of the duct is preferable, but that the anastomosis should be performed over a Kehr Deaver T-tube allowing of prolonged drainage of bile to the exterior, a point he regards as essential. If the operation of anastomosis of an hepatic duct to the alimentary canal proves impracticable, the only possibility is the production of an external biliary fistula followed by an attempt subsequently to dissect out and anastomose the fistulous track to the gut as described by Lahey,[22] of Boston. In all cases prolonged drainage is to be aimed at, and after any of these complex and difficult operations a recurrence of symptoms is to be feared. The desirability of drainage in such cases has been emphasised in this country by Moynihan. In view, therefore, of this opinion that in all cases where the common duct is or is likely to become obstructed, with consequent biliary stasis, a long period of drainage or even permanent drainage is desirable and that, in all cases in which the cystic duct remains patent, the gall-bladder offers the possibility of permanent drainage, would it not be sound practice to utilise it in a short circuit? After such a short circuit, stasis within the biliary tract seems unlikely, and consequently calculus formation is improbable. In the absence of calculi carcinoma is exceedingly rare, and the abolition of stasis by free drainage should have a beneficial effect on latent infection throughout the biliary tract and upon hepatic function.

By the term short circuit we can be taken to mean the operations of cholecystgastrostomy and cholecystduodenostomy as anastomosis to the rest of the small bowel or colon are more difficult to perform and more divergent from the normal anatomy of the biliary tract.

The suspicion with which short circuit operations are regarded is undoubtedly due to the fact that they have been performed almost entirely in cases of obstructive jaundice due to malignant disease in the head of the pancreas, and the figures showing the survival period after the operation under such conditions are certainly not encouraging. Thus the proven cases, 25 in number, operated on in St. Thomas's Hospital during the last nine years, all succumbed within nine months of operation, and 17 within six weeks. Undoubtedly not enough attention has always been paid to technical details such as the preoperative preparation of the patient against the risk of hæmorrhage, but if the patients survive the operation their condition is greatly alleviated as pointed out recently by Walters and McVicar,[23] and death is due to spread of carcinoma and interference with the pancreatic function and in no sense to the short circuit operation as such.

If we examine the results of this type of operation when carried out for the relief of inflammatory conditions in the bile passages we find a very different state of affairs. I have collected all the cases I could find of this type, 18 in all, performed at St. Thomas's Hospital, and all having been performed since 1923; in more than half the operations were done by me personally and all the patients are alive and well, whilst the majority are cured completely of their symptoms. Further, experimental animals can be maintained in perfect health and condition after such an operation. Having established the fact then that, speaking generally, the results of a short circuit when performed for the relief of an inflammatory lesion are good, let us consider in detail any theoretical or established objections to the procedure taking the various points seriatim.

In the first place it has been doubted whether it is possible to produce a permanent and adequate anastomosis between the alimentary canal and the gall-bladder, unless the common bile-duct is obstructed completely, a state of affairs not likely to be the result of inflammation. I have had an opportunity of observing two cases, one five months and one two years after operation, and in each case the stoma was as large as when made and the same is true in experimental animals. I feel sure that an opening that will admit the little finger is desirable, and both Deaver and Wangensteen [24] of Minneapolis, strong advocates of the operation, consider an adequate anastomosis very important as otherwise cholangitis is liable to persist.

The second point is the practicability of utilising the gall-bladder for the formation of an anastomosis seeing that in these cases the gall-bladder will be diseased. Obviously it is essential that the continuity of the cystic duct should not have been destroyed, for if so the operation will be useless. The presence of inflammation in the gall-bladder is no bar to the operation provided the condition has not progressed to the extent of gangrene. In one of my own cases acute cholecystitis was present consequent on the impaction of a stone in the neck of the gall-bladder. On tapping it and pushing back the impacted stone, the condition of the viscus improved at once as shown by free bleeding and change in colour. An anastomosis was therefore made with the stomach, and the patient made an uninterrupted recovery and was so well satisfied with her condition that, three years later, she advised her mother, aged 70, to come to London from a considerable distance because she also suffered from cholelithiasis. A microscopic section of the gall-bladder wall in this case showed it to be densely infiltrated with polymorphonuclear leucocytes. Chronic inflammation, unless accompanied by gross fibrosis or destruction of the mucous membrane, does not make the operation impracticable and, in this connexion, it may be remembered that the mucous membrane is often surprisingly little affected.

Thirdly, it has often been stated that after a cholecystgastrostomy the presence of bile in the stomach gives rise to nausea or even vomiting from gastric irritation. In all my personal cases and in those which have come under my observation, vomiting has been conspicuous by its absence. This, however, leads us to a more important point—namely, the effect of bile present in the stomach or gastric function. I have investigated gastric curves in five cases after cholecystgastrostomy and these are all within the normal range and correspond to the preoperative curves, although the resting juice in every case and the subsequent samples in most were stained with bile. This fact has been noted by other observers—namely, Oddi,[25] Dastre,[26] so long ago as 1888–90, and more recently in America by Beaver,[27] Grey,[28] and others. Here it should be noted that it seems unlikely that the operation can have any beneficial effect in the treatment of gastric ulcer as has been claimed.

The next point that suggests itself is that even if the passage of bile into the stomach has no effect on gastric function, is the converse equally true that contact with the gastric mucosa has no effect on bile as a participant in fat metabolism? I have not been able to detect any interference with fat metabolism in experimental animals previously subjected to a short circuit even in the presence of total obstruction of the common bile-duct by ligature carried out at the same time, the amount of fat in the fæces and the percentage of split fat being quite normal. Clinically there is no evidence of impaired fat digestion in cases of inflammatory disease, but this is in contrast with what occurs

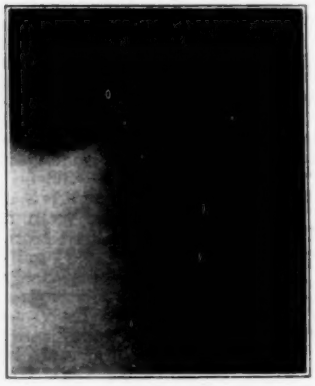
in malignant disease of the pancreas where not unnaturally severe impairment is often met with.

When we turn to the effect of a short circuit in improving hepatic excretion by relief of biliary obstruction we find, as is well established, a rapid diminution in the degree of jaundice, if present, and I [29] have shown elsewhere that another indication of hepatic retention—namely, a high blood cholesterol value falls rapidly after drainage is established in this way. Thus in one case where the blood cholesterol value was 0·334 g. per cent. before operation, it fell to 0·160 g., a normal figure, 15 days after cholecystgastrostomy. Further, I have not been able to produce a rise in the normal figure by feeding cholesterol to experimental animals previously subjected to short circuit.

CHOLANGITIS AFTER OPERATION.

I now come to the point of vital importance and one which affects the whole validity of the operation—namely, the effect of a short circuit in relieving or curing cholangitis or the possibility that in itself it will tend to favour its occurrence. Firstly, we have the clinical fact that patients suffering from obstructive cholangitis with repeated attacks of fever and jaundice are cured by the operation. Seven of my cases showed these symptoms before operation, and since have been completely free; as two of these cases date back no less than seven years this is a very striking fact.

FIG. 2.

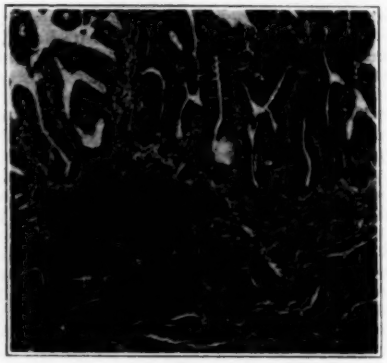


Radiogram from a case of cholecystgastrostomy, showing barium entering the stoma.

As a check on the operation lævulose curves were carried out on ten patients who had been subjected to short circuits to test the hepatic efficiency. The results showed in nine cases normal curves. In only one case was a truly abnormal curve shown and this patient was known to be suffering from alcoholic cirrhosis. The figures for normality and the method used were based on Tallerman's [30] paper. Fouchet's test for latent jaundice also gave negative results.

On theoretical grounds it may be pointed out that the condition produced by the operation is not strictly physiological in that there is no sphincter guarding the adventitious opening into the alimentary canal such as obtains at the natural opening of the common bile-duct, and therefore infected material may regurgitate into the biliary tract. If we accept the evidence of radiograms taken after a barium meal this does not occur to any appreciable extent. Fig. 2 shows a case of cholecystgastrostomy shortly after a meal. This shows barium entering the mouth of the stoma only and incidentally being taken eight months after operation fail to show any contraction of the stoma or deformity of the stomach, resembling exactly the radiograms taken immediately after operation. In experimental animals I have found particles of food in the body of the gall-bladder near the stoma, and on one occasion, as Beaver [27] working in the Mayo Clinic has also recorded, ascarides. When we come to the results reported in experimental animals, however, we find statements of definite evidence of cholangitis consequent on short circuit operations. Beaver,[27] working on dogs, has stated that infection in the liver and gall-bladder is invariable after cholecystgastrostomy and similar results have been recorded by Gatewood and Poppens,[31] by Horsley,[32] by Lehman,[33] and by other American observers. Horsley states further that infection is more marked after duodenostomy than gastrostomy. Beaver gives no dates for the survival period of his experimental animals. On the other hand, Deaver[34] of Philadelphia, White [35] of Washington, Du Bose [36 37] of Alabama, Jacobson,[38] and other American observers are strongly in favour of the operation for inflammatory lesions and report favourable clinical results. In this country Moore [39] and Stretton [40] have reported isolated cases, the former for a case of pancreatitis, the latter for one of stricture of the common bile-duct.

FIG. 3.



Cat's gall-bladder 12 months after cholecystgastrostomy, showing hypertrophy of muscle and mucous membrane. Z.m.m. = zone of mucous membrane; Z.m. = zone of muscle.

Experimental Observations.

My own experimental results are of interest, and in essential are as follows.

The experiments were carried out on adult cats which were subjected to cholecystgastrostomy or cholecyst-duodenostomy, and in certain cases ligature of the common bile-duct close to the duodenum in addition. The animals were kept alive six months to a year after the operation and maintained good health, and when put on a high fatty diet showed no evidence of impaired fat digestion as shown by estimation of the fæcal fat, there being extensive deposits of fat present in the subcutaneous tissues, liver, &c., when the animals were examined

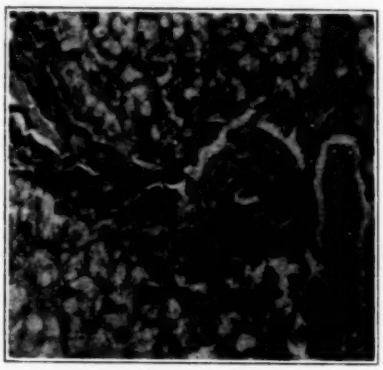
FIG. 4.

Line of anastomosis showing tremendous hypertrophy of mucous membrane of gall-bladder. G.m. = gastric mucosa. G.-b.m. = gall-bladder mucosa.

subsequently. The site of anastomosis corresponded closely to that made in the human subject—that is to say, in the case of a gastrostomy a point on the anterior surface of the pyloric antrum. In the case of duodenostomy the opening was relatively comparable, being proximal to the entrance of the common bile-duct into the duodenum. The relative size of the stoma was also strictly comparable, being about a sixth of an inch in diameter in the case of the cat.

The microscopical findings at the time the animals were killed can be considered throughout the various parts of the biliary tract. In the gall-bladder itself, particularly near the stoma, there is definite thickening of the wall and more than would be accounted for by mere collapse of the viscus. Examine the photographs showing a normal cat's gall-bladder in the state of distension and a similar bladder in the state of collapse. There is apparent thickening due to contraction as pointed out by Boyden. Fig. 3 shows a gall-bladder removed one year after cholecystgastrostomy which was performed in January, 1928, and the animal killed in January, 1929. Three things are noticeable. First, the tremendous hypertrophy of the unstriped muscle; secondly, the deepening of the mucous membrane; and, thirdly, the absence of inflammation. The hypertrophy of muscle is more obvious even in sections stained by Mallory's method and presumably due to submission of the gall-bladder to the peristaltic pressure of the stomach. The deepening of the mucous membrane is very marked near the anastomosis and is shown in Fig. 4, when on the one hand we have gastric mucosa and on the other hypertrophic gall-bladder mucous membrane. This last point has been noted previously by Smith [41] of St. Louis. The absence of inflammatory reaction is shown by examination under a higher power.

FIG. 5.



B.-d.

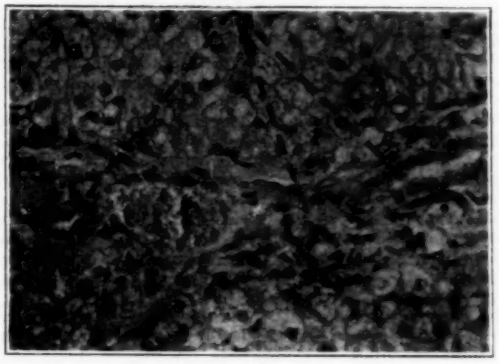
Normal cat's liver, showing a portal sheath. B.-d. = bile-duct.

Bacteriological examination in these experiments was of interest, for whereas culture from the gut and lumen of the gall-bladder showed growth of *Bacillus coli* and streptococci, the wall of the gall-bladder and cystic duct, and also the liver in both the peripheral and deeper portions, including the larger bile-ducts, proved sterile on culture in serum glucose broth both aerobically and anaerobically.

When the effect on the liver itself was studied the microscopic appearances were normal and microscopically as a rule nothing abnormal could be detected. Fig. 5 shows normal liver with one of the small hepatic portal sheaths and Fig. 6 a similar specimen from a cholecystgastrostomy, the animal being killed twelve months subsequently. These may be contrasted with Fig. 1 taken from a human liver in a subject suffering from cholecystitis. In one case of cholecystgastrostomy and ligature of the common bile-duct some changes in the portal sheaths appeared to be present, but even in this case the liver and walls of the biliary passages were sterile in culture, although the mucous membrane showed catarrhal inflammation. This is in very sharp contrast with the experimental results reported in America, where gross infection was the rule, and accords more with the reported good clinical results.

FIG. 6.

B.-ds.



Cat's liver 12 months after cholecystgastrostomy. B.-ds. = bile-ducts.

I would claim, therefore, that after the short circuit operation there is no bacteriological or gross histological evidence of ascending cholangitis, although it is possible that this may occur as a transitory phase during convalescence from the operation, or in the presence of complete obstruction of the common bile-duct, and, incidentally, total obstruction is never produced by inflammatory changes. I hope to undertake further experimental work on this point.

Judd,[42] in a consideration of the results of side-tracking operations, states "that infection is not as apparent clinically as might be expected from a study of experimental animals after operation, and that in the case in which the gall-bladder has not been removed and in which the cystic duct is patent so that there is bile in the gall-bladder, the preferred operation is cholecystgastrostomy. This operation can be carried out easily." I can corroborate this. Whipple [43] of New York records similar experience.

TECHNIQUE OF OPERATION.

As regards the actual technique of a short circuit operation in man, the best exposure is obtained by an incision through the sheath of the right rectus muscle with outward displacement. In the majority of cases cholecystgastrostomy will be the operation of choice as an adequate stoma—that is to say, one admitting the little finger—can be made, and the anastomosis can be performed outside or flush with the abdominal wound, permitting of adequate packing off from the general peritoneal cavity. This is an important point because after incision of the gall-bladder infected bile and stones will have to be evacuated. Personally I never use clamps as I find them a hindrance and apt to damage the delicate tissues, and I use two layers of continuous sutures, the inner being inserted in the manner described by Connell. Performed in this way the anastomosis should be perfectly secure, and it is unnecessary and definitely inadvisable to tack omentum to the suture line. The actual site of the stoma is found to lie most conveniently on the anterior surface of the pyloric antrum about an inch to the left of the pylorus.

In certain cases where the patient is thin or the duodenum mobile cholecystduodenostomy will be found equally easy to perform, but owing to the limited peritoneal coverings of the duodenum it will be found impossible to make as large a stoma, the

size of a lead pencil being the largest possible and the anastomosis will lie in close juxtaposition to the pylorus. I always close the abdomen in layers without drainage, and in the human subject have never experienced any leakage at the suture line. In experimental animals the gall-bladder is so thin that it is impossible to insert a truly sero-serous stitch which does not transgress the lumen at any point and for this reason I have had trouble from leakage in two experiments. In man radiograms taken subsequently have failed to demonstrate any pyloric deformity or delay six months after the operation, by which time any cicatrisation likely to supervene should have occurrred. Unless it is obvious that cholecystduodenostomy can be performed with ease and safety, I should say that cholecystgastrostomy is the operation of choice. The convalescence of these cases is remarkably smooth, the average duration of stay in hospital after the operation being 18 days; there is no need for frequent dressings and there is no loss of bile to the exterior with consequent impairment of nutrition. The risk appears to be small as I have collected 18 cases without a fatal result. Stasis in the biliary tract is avoided and a permanent safety valve provided. Associated lesions, such as a stone in the common bile-duct, if removable, should be dealt with at the same time.

The Table shows in some detail a summary of the 18 cases of short circuit performed for inflammatory conditions in the bile passages. I would

Eighteen Cases of Short Circuit of Cholelithiasis.

Case.	Sex.	Age.	Length of history in years.	Jaundice.	Nature of symptoms.	Operation findings.	Date of operation.	Type.	Result.
1	F.	29	1	+	Cc. 1922.	Panc.	4/4/23	Cd.	C.
2	"	66	4	+	Cc. 1919.	Panc.	18/7/23	Cd.	C.
3	"	43	1	+	A. colic.	Panc.; st.	30/4/26	Cg.	C.
4	"	45	1	/	"	St. in g.-b.	31/10/26	Cg.	C.
5	"	49	1	/	"	"	15/12/26	Cg.	C.
6	"	52	1	/	"	"	22/2/27	Cg.	C.
7	"	52	3	/	"	"	7/4/27	Cg.	C.
8	"	63	8	/	"	"	12/5/27	Cg.	R.
9	"	53	20	/	"	"	22/6/27	Gg.	C.
10	M.	60	1	+	"	"	19/8/27	Cg.	C.
11	F.	36	3	+	"	"	26/5/28	Cg.	R.
12	"	50	1	+	"	"	31/5/28	Cg.	C.
13	"	69	20	+	Cc. 1926	Panc.	16/8/28	Cg.	C.
14	"	55	1	−	A. colic.	St. in g.-b.	28/3/29	Cd.	C.
15	"	52	8	+	"	Panc.; st.	30/5/29	Cd.	C.
16	M.	44	2	+	"	St. in g.-b.	8/7/29	Cg.	C.
17	"	63	7	+	"	Panc.; st.	4/9/29	Cd.	C.
18	"	67	1	+	"	St. in g.-b. and c.b.-d.	9/9/29	Cg.	C.

Cc. = cholecystostomy. Cg. = cholecystgastrostomy. Cd. = cholecystduodenostomy. A. colic = attacks of colic. Panc. = pancreatitis. St. = stones. G.-b. = gall-bladder. C.b.-d. = common bile-duct. C. = cured. R. = relieved.

emphasise again that these 18 cases are not in any sense selected but represent all the authentic cases of short circuit for inflammatory conditions performed at St. Thomas's Hospital I could collect. The mortality was nil and the end-results up to date give as cured and two as relieved, while none are definitely failures.

One of the cases relieved was an early case in which I tacked the omentum round the anastomosis and the patient also suffered considerable post anæsthetic bronchitis as a result of which there must have been partial failure of union in the peritoneal suture line. Dense adhesions formed, obstructing the pyloric end of the stomach and necessitating laparotomy for their division; from the point of view of the biliary tract the result appeared good. The gall-bladder wall was soft and supple, the stoma unchanged. The patient expresses herself, three and a half years later, as definitely improved, has gained over a stone in weight, and when I saw her recently appeared to merit the description of cured. The other case was one which the doctor describes the patient as still suffering dull pain in the stomach, but otherwise the condition is good. In this series you will see there were 13 cholecystgastrostomies and five cholecystduodenostomies, and that in 11 there was clinical evidence of cholangitis—that is to say, jaundice before operation—and corroborated by microscopic changes in the ducts at operation in 7.

Conclusions.

What place in the treatment of inflammatory conditions of the bile passages should a short circuit operation occupy? I think it fair to say that in all cases where obstructive changes are present or suspected or are deemed likely to supervene in parts of the biliary tract other than the gall-bladder permanent relief of symptoms is produced. My own results lead me to favour the view that where the gall-bladder is comparatively healthy except for the presence of calculi and the cystic duct is patent, it should prove the operation of choice in cholangitis, in stricture, and in any case where the head of the pancreas is found to be hard. Published statistics of other operations undertaken for similar conditions after removal of the gall-bladder has been previously carried out are not so satisfactory. Although some authorities produce experimental evidence of invariable infection in experimental animals there is no clinical evidence of this, and I have carried out experiments in animals without producing demonstrable infection. I have carried out the operation in man with success and the absence of any clinical evidence of subsequent infection in cases where disease was considered to be localised to the gall-bladder alone. But in view of the conflicting opinions as to the risks and degree of ascending infection, I think further evidence must be obtained before the operation can be regarded as an alternative to cholecystectomy for this type of case.

In conclusion, I should like to thank Dr. T. H. Wilson, my house surgeon, who made the microphotographic preparations; Dr. W. J. Griffiths, who carried out or supervised the chemical investigations; and, above all, Sir Cuthbert Wallace for his encouragement and for giving me the facilities of the Surgical Unit.

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ATHLETICS IN SCHOOLS.

Introducing a Discussion at the Hunterian Society on March 24th

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I RECOGNISE that you want from me the facts and experiences of my 27 years' service as a public school medical officer, covering the medical and athletic records of over 4500 boys, and though statistics may be the refuge of the intellectually destitute, they may have their uses. I may find it difficult to avoid the athletic standpoint, as I have had a humble though lifelong active participation in all school sports, except rowing, boxing, and long-distance running.

Challenging Voices.

It is rather over twenty years ago since the question of abuse of games and runs in schools was fully discussed by the Medical Officers of Schools Association, owing to a letter in the public press, signed by four of the most eminent doctors of the day, condemning all runs of over one mile in length. The result of a two days' debate was a general approval of the way games and the like were managed. We have possibly lived in complacent self satisfaction, I hope not in a fools' paradise, since then, and it is an excellent thing that we should once again review our actions and policy, the more so as history has repeated itself and, a year ago, another very distinguished member of the profession made a sweeping attack in the public press on the management or rather want of management of sports and athletics in public schools. The charges made were so serious, that I and several of my colleagues wrote and challenged the accuracy of the article, and received the reply that the statements did not apply to us personally. As this article bears directly on to-night's discussion, I will quote from it:—

"So many instances of the very deleterious results of excessive exercise upon both girls and boys have come under observation recently, that it seems advisable that some definite control should in future be exerted upon the amount of exercise which each pupil shall, after adequate examination, be considered capable of, on entry into school.

"That the headmaster or mistress should exert this control of exercise is utterly ridiculous, and the many examples of serious harm, and in one instance of death, which have resulted in consequence of excessive exercise in individual cases, shows that the question of games and exercises urgently calls for the closest attention.

"The craze for games in our public schools is carried to a ridiculous length, and the powers of a headmaster to order a growing boy, who does not play cricket or football, to run as many as seven miles a day is simply intolerable.

"In several instances, in consequence of this overstrain in growing lads or girls in important public schools . . . the health or even the lives of the pupils have been endangered or permanently deteriorated."

The writer goes on to compare our system unfavourably with that adopted in other countries. Now the fact, which is I believe unique, that games are compulsory in public schools in England, makes it all the more important to meet if possible this charge, based apparently on definite facts. I have therefore reinforced my own experience by that of the medical officers of 30 of the large public schools, embracing over 16,000 boys, and covering periods of from 3 to 30 years.

Exercise of Control.

The first point is the amount of control exerted by the school medical officer. This necessarily varies, according as the medical officer is whole or part time, but with one exception, all my correspondents express themselves as satisfied with their powers of control and management. Indeed, quite a number speak of absolute power of veto and complete control. It is also true that our advice is sought and generally followed on many aspects of school games, while so much care is taken for the weakly individual that it might be said of us: "So careless of the type we seem, so careful of the single life."

At the same time, it is equally true to say that changes, not necessarily for the good, can readily creep in without our knowledge, and it is of course also true that we are all of us liable to make mistakes or errors of judgment. Boys are just as foolish as we were, and perhaps more emancipated, and they need constant watching, as regards the regulations they make. Arm-chair administration or supervision will certainly allow abuses to develop, and constant observation on the part of the medical officer is the only real safeguard.

There is one school, in which the medical officer of several years' standing (who has since retired) states that he had no control, that his advice was not sought, that there was no proper supervision over training, that boys overtrained hopelessly, that frequent fainting had occurred on long cross-country runs, and that games began immediately after meals. It is true that nothing disastrous had happened so far.

Fatalities.

These are surprisingly few—a total of six in the last 20 years. Of these, four were pure accidents: one diving from a forbidden height, one fractured skull from a cricket ball, one palmar abscess and septicæmia also from a cricket ball, one ascending myelitis following a football injury. The fifth was a sudden death on the football field in a previously healthy boy two hours after his dinner. Post mortem nothing abnormal was found either macro- or microscopically, but there was undigested food in the stomach. The sixth case is considered doubtful by the reporting medical officer. A boy who had had slight tonsillitis, high-jumped eight days later, and ran a short race ten days later; he developed heart symptoms, and died seven months afterwards from infective endocarditis.

Very near to death were two cases of fractured cervical spine which both recovered, and the remarkable cases of a depressed fracture of the skull at football, which was immediately taken to hospital, operated on, and was back in bed before the end of the game. Quite recently a case was reported of a girl of 15 who died suddenly on the hockey field, the coroner recording a verdict of heart failure following exercise after a heavy meal.

Disability.

The next question concerns severe disabilities—i.e., those causing long or even permanent incapacity. Here one is on much less sure ground, owing to the different value that may be attached to the word "severe"; but 25 schools record no known instance, and five others record ten cases: of these six followed rowing, and four followed cross-country running—two of the latter being boys who had recently had mild influenza.

I had myself remembered and known of no such cases, but wrote to some 30 old boys, of whom I had records of cardiac disability, in which school exercise might have been a factor. With one exception, all who replied, 20 in number, said that they had been all the fitter for their school exercise, and several of them reported a very strenuous after-life, such as boxing for years for a living, prospecting, digging for oil, winning a competitive 45-mile walk, hunting big game, and active service in the Army. The single case is that of a man who came to the school with a previous history of rheumatic fever, who attributes his breakdown to a three-mile run. He was taken away from school and has undoubtedly been permanently affected. This was 27 years ago, just after I went to the school.

I also wrote an open letter to the school magazine, asking any old boy who considered he had suffered any ill-effects as the result of the exercise at school, to write to me: I have had a number of answers, but all of them so far praising the system, and stating

that they derived nothing but benefit. Such a negative reply may not of course be worth much.

Possible Abuses.

So far I have referred to the past, but my last question to myself and my colleagues was about possible abuses, such as excessive amount of exercise, unequal grouping both of age and physique, short time after meals or playing games too soon after some illness.

Excess.—Whether it is a sign of advancing years, or of increased experience, I know not, but I do feel that there is some evidence of the intemperance of physical exercise. To be "cock house" is the overriding ambition of the average healthy-minded, and in the autumn and spring terms he will do much to secure this. The intemperance shows itself, not in a complete breakdown, but more in general fatigue and lassitude, loss of weight, diminished and inferior intellectual output, crying out for less work, both mental and physical. This condition is seen in the strong robust types, not seldom in the heads of houses or XVs., who have a very full life; it is not serious in them and soon recovered from, but it more serious and important in the young promising athlete. The above symptoms are also often seen in cases of slight concussion, which have not been reported or noticed at the time.

Football is now the tyrant. Immature house captains may be veritable slave-drivers, and their partisan zeal, or as Dukes said: "The enthusiastic impulses of exuberant youth," praiseworthy from many points of view, and not infrequently shared by young and keen house masters, may, I feel sure, lead to excess, and the young colt of under 16 in particular does need safeguarding, not only for his own health, but also, if I may so, for the good of his own game, and therefore for his house. From this point of view, I have long urged what I call the N.C.C., that is, an occasional "non-compulsory changing day," when a boy need only play or take exercise if he wants, not because he must. I am glad to find that this is advocated by some other school medical officers.

Runs, both road and cross-country, have undergone a remarkable change in my experience. Twenty-five years ago, runs of 1¾ and 3 miles were the shortest; they might be run three or four times a week, and the younger the boy, the more often he ran them. Cross-country runs were in vogue. Nowadays these 1¾ and 3-mile runs are the longest routine runs; they are run much less often, and one of the present usual exercise runs is rather less than a mile on grass with posts fixed at varying intervals for mixed sprinting and walking. This was introduced to diminish the number of deadly dull road runs, so generally disliked, and also to try to increase our pace, in which, as a school we are deficient (due partly to this, and also to our clay soil which makes for endurance rather than for speed). I think we have cut out runs too much, especially for the bigger boys for training purposes; the more so, as I have never seen any harm from them (except for the one case quoted previously) except to the feet. And here I must protest against the use of heelless gym shoes for road runs by young boys. This is definitely harmful, and dropped arch, and bruised and painful heels are a common result.

To the parent, however, the school run still seems to imply a 5 to 10-mile run at racing speed over difficult country, probably spurred on by some stern prefect, and I am still being often asked by them or the home doctor to give leave off. As a matter of fact, asthmatics are about the only ones who should be excused.

The *competitive steeplechase* is totally different. As with all other sports, it is primarily a house concern, and six picked boys from each house enter. The distance is about 3½ miles over a difficult and heavy country, and is undoubtedly a great test of endurance. The increased difficulties of the course have gone hand in hand with the virtual elimination of cross-country running, and shows the need for constant care on our part. Entrants should be over 16, and should have been vetted by the medical officer in some efficient way. I have known of three cases in which the heart was temporarily strained, and vomiting is not uncommon.

To judge from the answers received from other schools, the number and length of all runs is diminishing, and I have accumulated almost no evidence of a harmful effect on the health of school boys from the ordinary routine runs of the present day, but opinions are much more guarded on the competitive steeplechase, for which most but not all medical officers insist on a previous examination.

Swimming.—This most fascinating sport also has its danger, in that it is very fatiguing; the danger is the greater, because the fatigue is very insidious and the pleasure so great that boys will not admit it. Twenty minutes a day should be the maximal allowance (except for the early morning dip), and life-saving practice should count as a bathe. It is my experience that the sick admissions invariably go up as soon as the bathing season begins, though to a much less extent since the length and number of bathes were cut down, and the ear and catarrhal subjects were forbidden to bathe.

Unequal grouping.—As regards physique, unequal grouping is on the whole rare, though it inevitably occurs in house matches; and indeed in any game of football the strongest player must be much stronger than the weakest. There is, however, a definite danger as regards age, especially in boxing. It is surprising what a difference two years in age may make between boys of the same height, weight, and apparent strength, and I have seen the nerve of three very promising boxers broken for this sport in consequence.

Time after meals.—Twenty years ago the Medical Officers of Schools Association laid down as a result of the debate to which I have alluded, the following: "It is most important that there should be an ample interval (one hour at least) between the time of the previous meal and the beginning of exercise. There is clear evidence that the neglect of this elementary rule is responsible for a very large proportion of the ills which have been attributed to over-exertion alone." A leading article in the *British Medical Journal* in the same year said: "The only direction in which outside stimulus is perhaps required is in respect of a due interval being allowed to elapse between meals and the commencement of a game."

At that time, after six years' experience, I wondered if I had been missing such cases, and after another 20 years I am still wondering, as to my knowledge I have seen none, though I know that this rule is and has been constantly violated. If the "one hour limit" refers to runs and football, then I certainly agree, though even in the latter the small boys have played short games within 40 minutes of a meal for many years. Apart from these two, squash, fives, rackets, gym, fencing, tennis, cricket, and sprint racing have been constantly indulged in half an hour after dinner with no ill-effect, so far as I can judge.

Exercise and the Heart.

The fact is that the juvenile stomach is as elastic and long suffering as the heart, and that brings me to the most important consideration: "Is the healthy adolescent heart ever impaired by exercise?" So far as my limited experience goes, the answer is in the negative, and to quote Clifford Allbutt, "In all cases of heart disability, some infectious disease, however slight, had preceded the physical stress." Undoubtedly cases of cardiac strain and disability do occur from time to time, some of which are brought to light by some form of exercise, and the commonest causes are, *not* an attack of measles, severe influenza, diphtheria, or scarlet fever, which we can and do guard against, but the slight chill or even cold, or the milder forms of influenza, which occur so often in a big epidemic, and which to me are always a cause of great anxiety.

The difficulties are increased from the start by the fact that there is so much variation in the healthy adolescent heart, and I might add in the opinions expressed by the home doctor, the school doctor, and the cardiologist, and I agree with Dr. W. Atlee when he

says, that in the absence of gross lesions, easy to detect, "one symptom is worth many physical signs, and exercise tolerance tests are the most practical value." I do not mean to belittle the value of examination. Primary examination of *all* boys on entry is of course essential, and re-examination of all delicate and suspects; but it is not among them that the danger of heart strain following exercise is most likely to develop. Regular re-examination of the whole school, advocated by many, would not, in my opinion, solve the difficulty. To examine 500 boys from the cardiac point of view, allowing 10 minutes a boy, would take 84 hours, and allowing 2 hours a day, 42 days. Much can happen in 6 weeks.

My own system, after any boy has been sick, is to leave off all exercise for three days, and then order gentle exercise for another three days or a week. This is gradually increased, football and runs being further curtailed, according to the results of my examination.

Exceptional Cases.

There are two types of boys who need a passing reference. One, the pre-puberty endocrine defective, generally of the obese variety, and often overgrown, who is capable of very little, till after puberty; and next the albuminurics. So long as a watchful eye is kept on the urine and general condition of the latter they may be allowed full exercise. Early in my career I remember two cases, whose urine contained albumin in large quantities, and whose athletic careers and characters suffered considerably from drastic efforts to stop the albuminuric leakage.

The boy who is debarred from all games is a great rarity, but many are partially barred, the one game that counts amongst them being football. Are there any bad effects as a result? Amongst the schools I consulted, five medical officers consider that bad moral effects must result, though no direct evidence has been produced, except in one instance. All the rest agree that it is very desirable that the energies of such boys should be directed into other channels.

The opinion is by no means uncommon amongst house masters, whose judgment cannot be dismissed lightly, that immorality is to be feared among this type. In my own opinion, the question of immorality depends almost entirely on the standard and tone of the school or house, but there is a definite tendency for such boys to become loafers, unless those in charge take the trouble to find some more or less congenial substitute—e.g., photography, engineering, carpentry, linesman, goal at soccer ("the haven of the tired heart"), golf, squash, fives, tennis, fencing, gym (the dangers of which have been much exaggerated), or the short go-as-you-please run, which is a glorified walk.

Athletics and Intellect.

Though not directly connected with the subject, it is worth while recording the relationship between these two. An analysis of 4500 boys who have passed through my hands shows that 39 per cent. of scholars gained school athletic distinctions, while 18·8 per cent. of the rest of the school did so. Of the scholars, those who only got junior scholarships on entry, and gained no further distinction, only produced 7·7 per cent. of athletic successes.

Athletic Sports.

These have undoubtedly become much more popular in post-war years. Every boy must enter for at least one event, and more than half the school do take part, and the heats are spread over three or more weeks. Unfortunately they seem to be associated generally with east winds, rain, or snow, and the risk of catching chills is a real one, and for purely medical reasons I should much prefer them to be held at the beginning of the summer term. Coaching and organisation has improved, and care is taken that the longer races are run on different days. Relay races were introduced here as far back as 1905. No boy should be allowed to compete out of his own class, a not uncommon happening, especially in the relay team races. It would be a good thing to limit the number of prizes that any one competitor might take.

Conclusions.

My conclusions, for what they are worth, are that games and sports in the bigger schools are on the whole very well managed and supervised, and that there is surprisingly little evidence of damage resulting At the same time, constant care is needed on the part of the medical officer and others to see that youthful enthusiasm does not lead to undue excess, and it is in the most healthy and vigorous type of school and boy that such excess is likely to occur. The truly healthy boy rarely, if ever, suffers any real harm, though he may overdo it at times. The real risk lies in boys playing games or running after some minor illness, generally slight influenza, and in times of epidemics it is impossible to be sure that no unfit boy takes part. Re-examination will not necessarily be a safeguard, as in so many cases, symptoms precede signs. In addition, if it is to be genuine, and not mere eyewash, the time involved makes such a method very difficult.

I think that routine runs of all sorts have diminished largely both in frequency and length the last 20 years, and in this respect the pendulum has swung too far. Properly graduated, they are entirely free from danger. The competitive steeplechase is, however, a potential danger, and needs close supervision, especially where ordinary cross-country runs have died out. The occasional non-compulsory changing day is of great value.

PATHOLOGY OF COLIFORM INFECTION OF THE URINARY TRACT.*

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IN my brief survey of the pathology of colon bacillus infections I intend to confine my attention rigidly to those cases in which no gross lesion of the urinary tract can be found. To include cases of long-standing urinary obstruction associated with such secondary changes as dilatation of the ureters, incompetence of the uretero-vesical valves, and hydronephrosis would be to complicate the subject to such a degree that not one but several evenings would be necessary for its discussion. The questions, therefore, to which I shall attempt to find an answer are these: (1) By what route do organisms reach the urinary tract in the ordinary uncomplicated case of coliform infection? (2) What are the causes that predispose a patient to infection?

The Route of Infection.

Two possible paths have here to be considered, the lymphatic and the vascular. Direct infection of the kidneys from the lower reaches of the urinary tract through the column of urine in the ureters need not be considered. Indeed it is doubtful whether this occurs even in the presence of obstructed and dilated ureters with bladder reflux and incompetent uretero-vesical valves.

It is probable that I owe the honour of opening the pathological side of this discussion to-night to the work I did some years ago on the spread of infection in the urinary tract through the lymphatics. Nevertheless I want to make it clear from the start that although I am convinced that ascending infection by the peri-ureteral lymphatics explains some of the cases of coliform infection we meet with, I believe that in the type of case to which I confine my remarks to-night the infection is more often descending than ascending.

* One of the opening papers at a meeting of the Medical Society of London on March 24th.

However, the less common ascending infections will be considered first.

The Ascending Route.—The fact that infection may spread from the lower urinary passages to the kidney by way of the peri-ureteral chain of lymphatics has, in my opinion, been amply proved by the experimental work of Steinck, Stewart, Eisendrath and Schultz, Paladino Blandini, Thiele and Embleton, Nelson and myself. It would be superfluous to discuss the experiments on which the proof rests, for it seems to me that the point at issue is not whether organisms may spread in such a manner but rather whether this mode of infection through the peri-ureteral lymphatic is at all frequent. My own impression is that it is not.

Some of the arguments that were formerly advanced in favour of infections of the urinary tract being ascending rather than descending are certainly fallacious. The fact that many patients complain of frequent and painful micturition before they show clinical signs of renal infection is no proof that their trouble has started in the bladder. Frequency may be a symptom of an infection that is confined to the kidney, and the order in which symptoms are noted by the patient does not provide a reliable indication of the direction in which the infection has spread. As Frank Kidd has pointed out repeated cystoscopies examinations and ureteric catheterisations will show that in many of the cases that clinically appear to be examples of cystitis followed by pyelitis the invasion has in reality taken the opposite direction. In other words, the more exact our methods of investigating the patient the more commonly do we find a descending rather than an ascending infection. Nevertheless ascending infections undoubtedly occur. A striking example of this was provided for me by a medical man who consulted me in a state of alarm because he had suddenly developed a slight urethral discharge. I found that his urethritis was due to a pure *Bacillus coli* infection. At the time of examination he had no symptoms or signs pointing to trouble elsewhere than in his urethra, but within 48 hours he had developed a typical attack of generalised infection with renal pain and tenderness, dysuria, frequency, fever, and rigors.

An argument that has frequently been advanced in favour of ascending infections, and against the theory that the kidney is first attacked through the blood stream is the fact that the blood, in cases of coliform infection, is sterile. This argument cannot be dismissed as unimportant, and the suggestion that in all probability the passage of organisms from the primary focus into the blood stream is an intermittent phenomenon and that if repeated cultures were to be made positive results would more often be obtained, does not altogether explain it. It must, however, be remembered that as a general rule organisms in the blood stream are carried by the polymorphonuclear leucocytes and do not exist free in the plasma. The chance of finding them is, therefore, increased by any process that separates off the corpuscles from the plasma. Unfortunately, however, in breaking down the leucocytes may liberate bacteriolysins which destroy the organisms and render ineffective the efforts of the bacteriologist to demonstrate their presence. It is this phenomenon that is probably to a great extent responsible for our negative results.

Unfortunately at the present moment we possess no data on which to base a decision as to the relative frequency of the ascending and descending routes in coliform infections. More observations are necessary before we are justified in arriving at any conclusion, and for this reason we must avoid the temptation to settle the matter by armchair speculations.

Predisposing Causes of Infection.

So far we have considered only the infective agent and the path by which it reaches the urinary system. It must, however, be remembered that the arrival of organisms in the kidney is not enough to produce a pyelitis or pyelonephritis. Experimentally it has been shown that coliform bacilli may be injected into a vein in large numbers without any renal lesion being produced. In order that a pyelonephritis may occur the soil must be prepared. Both experimentally and clinically it has been demonstrated that obstruction to a ureter is an effective preparation, and Dr. Elizabeth Lepper has proved that complete obstruction for so short a period as a quarter of an hour is sufficient to render the kidney vulnerable. She suggests that the mechanism of this is a rise in pressure of the distended renal veins causing venous congestion and hæmorrhage into the kidney substance. In some of our clinical cases a transient and partial obstruction of the ureter may actually be the predisposing cause to the affection of the kidney, but it is difficult to believe that this is common; and we are forced to search for other factors. Our patients find for themselves a plausible explanation in "chills" and "trauma," and although we are naturally cautious in accepting these theories, it is possible that even a mild disturbance of circulation in the kidney may be sufficient to render it susceptible to the action of hostile germs. Moreover, since Helmholtz has shown that certain strains of *B. coli* show a selective affinity for the kidney, it has become less difficult to imagine that in a patient whose general resistance is low a trifling departure from the normal may be sufficient to precipitate a pyelonephritis once these germs have reached the renal tissues.

The Source of Infection.

Clinicians and experimentalists agree that the common source of infection is the bowel. This receives strong clinical support from the fact that the invasion of the urinary tract is commonly preceded by a history of some bowel upset either in the shape of an attack of diarrhœa or of an aggravation of a habitual constipation. Two other observations, for which I am indebted to Dr. D. Embleton, point in the same direction. The first of these is Dr. Embleton's observation that if different dilutions be made of the infected urine and cultured anaerobically a *Streptococcus fæcalis* is often found in addition to the more abundant and more luxuriously growing coliform bacillus. Whether this accords with the experience of any other bacteriologist I do not know.

The second observation is that if a patient who is convalescing from an attack of coliform bacilluria be given a dose of cascara, there is an immediate increase of organisms in the urine. The irritant action of the cascara on the intestinal wall is so invariably followed by a bacilluria that this purgative may be used as a provocative agent in deciding whether a patient is cured or not of his urinary infection. From this we may deduce that irritation of the bowel wall is an important factor in the production of a coliform infection of the urinary tract. That this is so was impressed on me strongly by two instances in which the injection of an anæsthetic into the large bowel in too strong a concentration was immediately followed by a coliform bacilluria. The first was provided by a rabbit in the anæsthetising of which I had employed an over-concentrated rectal injection of urethrane, the second by a patient of Dr. J. J. Clarke's who had received by the rectum a dose of paraldehyde prior to a gynæcological operation. In both instances the colitis produced by the rectal injection was followed by a severe infection of the urinary tract. Histological examination suggested that in the case of the rabbit the colon bacillus had invaded the bladder directly from the rectum.

Now although these two cases show that inflammation of the wall of the bowel permits of the emigration of leucocytes charged with coliform bacilli, they do not give any indication of the path along which these carriers of infection travel in order to reach the urinary tract. Three routes are open to them. They may pass straight into the blood-vessels of the mesentery, they may invade its lymphatics and reach the blood stream indirectly through the thoracic duct, or finally they may reach the kidney through an all lymphatic route by branching off along the large lymphatic trunk that joins the receptaculum chyli from the renal area. That

organisms may travel along lymphatic vessels in an opposite direction to that normally taken by the lymph flow has been repeatedly indicated. I am convinced, therefore, that although the first two modes of infection are the more probable the third must still be considered as possible.

Morbid Anatomy.

Whilst we must confess that clinically speaking we possess no precise knowledge of the path along which infection spreads to the kidney, as morbid anatomists fortunately we find ourselves on firmer ground. The work of Helmholtz at the Mayo Clinic, and of Nelson at St. Bartholomew's Hospital, has to my mind clearly shown that lesions of the kidney produced in rabbits by the intravenous injection of organisms tend to localise themselves in the kidney substance and in the papilla, and adjacent lining of the renal pelvis, and that ascending lesions produced by bladder inoculation tend to affect the parietal wall of the renal pelvis. Post-mortem findings support the view that what is true of infection of the kidney produced experimentally in rabbits is also true of renal infection occurring in human beings. In the fulminating case of coliform infection described by Brewer and almost certainly due to a blood invasion, the septic areas were in the kidney substance, whilst in pyelitis associated with lesions of the lower urinary tract the lateral walls of the pelvis are mainly affected.

There emerges from animal experimentation yet another fact that may be applied to infections in human beings. It has been clearly demonstrated that whilst dyes and organisms are rapidly taken up by the lymphatics of the posterior urethra little or no absorption occurs when these are injected straight into the bladder. This, of course, is equally true of such drugs as cocaine, a patient being able to tolerate in the bladder a dose which were it injected into the posterior urethra would give rise to grave signs of toxæmia. From this it would appear that an ascending infection of the kidney via the lymphatics is more likely to follow a posterior urethritis than a cystitis. It is this rapid absorption of organisms from the urethra that probably accounts for the phenomenon of catheter fever, and also for the rarity of ascending infections in cases of cystitis not associated with obstructions. It also explains the coliform infections that not infrequently follow the consummation of marriage in females. Finally it helps us to understand why a residual focus in the prostate so often is the cause of relapse in the male.

There is yet another type of case of coliform infection that may be due to an invasion of the kidney through the lymphatics—namely, that which so commonly occurs as a sequel to gynæcological operations and even to labour. The close connexion between the lymphatics of the female genitalia and those of the ureter render the kidney particularly liable to invasions from this angle. But I have already published a paper on this subject in THE LANCET of 1922, and will not go into it further at the present moment. All that need be said is that although it is probable that coliform infections of the kidney are in the main blood borne, those following operations on the pelvic organs and those preceded by a posterior urethritis are more likely to be due to a spread via the lymphatics.

Conclusions.

In attempting, therefore, to find an answer to the two questions put at the beginning of this paper, the following tentative conclusions have been reached:—

1. That the kidney may be invaded in uncomplicated cases of *B. coli* infection either by the blood stream or by the lymphatics.

2. That in the majority of cases the infection is descending, but that when it occurs as a sequel to a pelvic operation or to a urethritis the invasion of the kidney is ascending and through the lymphatics. In a few exceptional cases direct invasion of the bladder from the rectum may also occur.

3. That in the absence of obstruction a lymphatic invasion of the kidney is more likely to follow a urethritis than a cystitis.

4. That the presence of the organism in the kidney is only one of the several factors that must be considered if we are to arrive at a full comprehension of the ætiology of the disease.

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NOTE ON A
WATER-SOLUBLE ACTIVE PRINCIPLE
ISOLATED FROM THE MAMMALIAN TESTIS AND URINE, AND ITS RELATION TO ŒSTRIN.

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IN a series of recent publications, workers in the University of Chicago (Moore and McGee, 1928; McGee, Juhn, and Domm, 1928; Gallagher, 1928, &c.[1]) have shown that certain extracts of the mammalian testis are capable of causing heterogonic growth of the head furnishings (combs and wattles) in castrated fowls. Similar results have been reported by Funk, Harrow, and Lejwa[2] (1930). The active extracts have mainly been prepared by the treatment of the tissue with volatile solvents, and an oily residue has resulted.

These observations have been confirmed by us, and through a study of the properties of the active principle it has been possible to evolve a method, which is described in this preliminary note, whereby it can be obtained in a water-soluble form.

Method of Standardisation.

All the birds used for this investigation were hatched in 1928 or 1929, and were castrated at ages varying from 3 to 78 days, and at the time of injection were from 20 to 58 weeks old. Measurements of comb size were taken periodically during the development of the birds, and for some time previous to these experiments they were made at fortnightly intervals. In the individuals used for the purposes of the present tests, the combs had either been stable for some months previous to the first injection or had increased in size at a rate not greater than that which occurs in the normal immature capon. Furthermore, in none of the capons chosen were the combs more than 5 cm. in length, since it is probable that any comb larger than this, even though stable, indicated the presence of a small testis fragment which might have complicating effects on the issue of the experiment.

With regard to the criterion of activity, it was

decided to regard as active an extract causing an immediate, sharp increase in the comb length of such a magnitude as to throw the curve abruptly away from the predetermined normal. Also, this sudden increase had to be followed by a definite

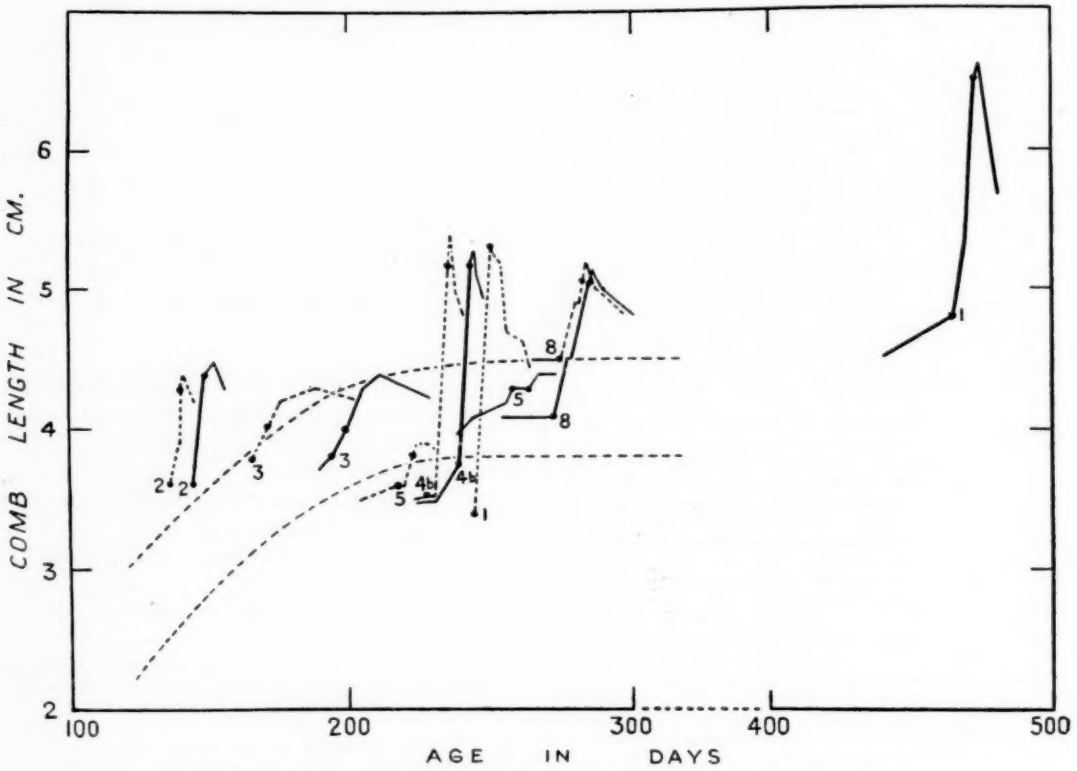


Chart showing effect of mammalian testicular extract on the combs of castrated fowls.

decrease in the comb length within a short period of terminating the injections.

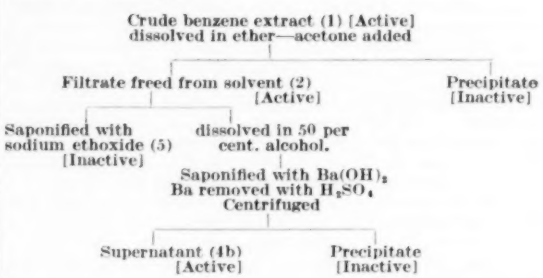
The growth curves for a number of normal capons for a period of from 190–300 days after hatching was found to fall within fairly narrow limits; their limit of variation is indicated in the figure by the area between the smooth curves. Though not all of the birds used in the present experiments had combs which fell between the actual limits of variation for their respective ages, yet their initial comb sizes did not deviate from the normal groups sufficiently to suggest that they were abnormal.

In order to test the potency of the various extractions, two birds were used for each product and the injections were given daily over periods varying from 5 to 12 days. The alterations in the comb length of the injected birds is shown graphically in the figure, the two dots on each curve representing the days on which the initial and final injections respectively were given. It will be seen that in the case of some of the extracts (Nos. 1, 2, 4b, and 8) a rapid growth of the comb resulted to a point much beyond that characteristic for the normal capon of similar age, and that when administration of the substance ceased this was followed by a rapid decrease in comb size. Extracts Nos. 3 and 5 were considered to be inactive.

At the present stage of the investigations it is felt that any quantitative interpretation of the results is unwarranted, and the results recorded here are intended to convey a purely qualitative idea of the activity of the various preparations.

Preparation.

The essential steps in the development of the process for isolating the growth-promoting factor are given in the following scheme of experiments. The starting-point in each case was a benzene extract prepared in accordance with the publications of the workers referred to in the beginning of this paper. The standardisation of this material is shown in curve 1 of the figure.



If filtration be adopted in place of centrifugation for the removal of the barium sulphate in the above scheme the potency is lost (3). The final product by the above type of method consists of a water-bright solution containing some 2 mg. per c.cm. of solid contents. This is non-toxic and non-irritant when injected into animals and, as already noted, contains activity. The potency can be extracted from this water-bright solution by ether, and if slow absorption is required it can be dissolved in sesame oil.

From the above experiments the following process was reached by the direct application of barium hydroxide to the minced testes.

Process.

The final method adopted is in every way similar to that published by Allan, Dickens, Dodds, and Howitt [3] for the preparation of œstrin from placenta. The details of the process may be obtained from that publication, but the following gives a brief outline of the method.

8 kg. of minced testes are mixed with 8 litres of water and 1·6 kg. of crystalline barium hydroxide. The mixture is boiled for two hours in a steam-heated pan with a reflux condenser. The resulting mass is at once filtered through jean and is evaporated down to about 6 litres, cooled and extracted with 2 litres of butyl alcohol for half an hour in a shaking apparatus. After separation of the supernatant alcohol the solution is re-extracted with two further quantities of 1 litre of butyl alcohol for half hour each. The butyl alcohol is then removed by distillation in vacuo below 70° C., and the residue is dissolved in 600 c.cm. of hot water and, after filtration, the filtrate, residue and filter paper are extracted with three successive quantities of 600 c.cm. of ether. The ether extract is washed always with 600 c.cm. of water and the ether is then removed on the steam bath and the resulting solution is evaporated to dryness in vacuo. The remaining traces of butyl alcohol are removed by the addition of a little water and distillation. The residue is found to be highly active in producing comb growth (No. 8 in figure).

Alternatively, a purer preparation may be obtained by taking the residue from the ether by evaporation and dissolving it in about 10 c.cm. of absolute alcohol, followed by the addition of 80 c.cm. of water. The resulting suspension is boiled and 10 c.cm. of a 10 per cent. boiling solution of crystalline barium hydroxide is added. The mixture is then boiled for one hour under a reflux condenser, and after cooling a theoretical quantity of H_2SO_4 is added to precipitate the barium. The resulting mass is centrifuged and the precipitate extracted with absolute alcohol and again treated with barium hydroxide in a similar manner. The clear, pale yellow supernatant fluid is evaporated down to remove the alcohol to a convenient volume. The resulting solution is clear, almost colourless, free from alcohol, and contains the active principle (8).

The Resulting Extract.

The activity may be extracted from an alkaline aqueous solution by means of ether, and after removal of the ether the residue may be dissolved in sesame oil. Experiments are in progress to determine the relationship of the potency between aqueous solutions and oil solutions of the active principle, in a similar manner to those recorded with regard to œstrin (Allan, Dickens, and Dodds [4]).

This process may be applied to the urine of men from which the substance can be prepared. The urine is evaporated almost to dryness and the residue boiled with benzene for one hour. The benzene is distilled off in vacuo, the last traces being removed by the addition of a small amount of alcohol and then redistillation. The resulting oil may be emulsified in water and sesame oil for injection, or may be treated by the baryta process if water-soluble material be desired.

Comments.

The properties of the active principle bear a very striking resemblance to those of œstrin. Thus, both hormones can be extracted by the addition of volatile solvents and both will stand prolonged hydrolysis with barium hydroxide. They can both be obtained in a water-soluble form and the properties of the two solutions are identical.

This relationship becomes still more interesting in consequence of the claims of such workers as Laqueur and de Jongh,[5] Brouha and Simonnet [6] that œstrin may be obtained by extracting testes with volatile solvents. The effects of the comb growth promoting extract on ovariectomised rats is being studied, and whilst an œstrus effect has been observed with one preparation it is as yet too early to express an opinion upon the physiological aspect of the relationship between these two hormones.

Summary.

1. A method of testing an active substance extracted from testes and urine by observing its effect on comb growth in capons is described. 2. It is shown that the active principle may be obtained in a water-soluble form, and its chemical properties are briefly reviewed. 3. Its similarity to the œstrus-producing hormone as prepared from placenta and the urine of pregnant women is noted.

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CORONARY THROMBOSIS AND COMPLETE HEART-BLOCK.

WITH A NOTE ON THE FEBRILE REACTION IN CARDIAC INFARCTION.

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AMONG the disorders of rhythm which may accompany cardiac infarction heart-block is frequently mentioned. While varying grades of partial block are not uncommon, complete auriculo-ventricular dissociation is a rarity. Thus in a series of 145 cases Levine and Brown [1] recorded only two instances; again Parkinson and Bedford [2] found complete heart-block only once in a series of 100 cases. Two reasons are advanced for the comparative immunity of the conducting system from the damage ensuing from coronary occlusion. First, that the interventricular septum is supplied by both the right and the left coronary arteries, and secondly that the vessels which supply the region of the auriculo-ventricular node, the bundle of His, and its two main branches are derived from the coronary arteries proximal to the usual site of obstruction.

Although the occurrence of complete heart-block is rare as a sequel of coronary thrombosis, the association of these two conditions in the converse order is still less common. The perilous state of a patient suffering from complete auriculo-ventricular dissociation and frequent Adams-Stokes attacks is sufficiently obvious; but when coronary thrombosis supervenes to add its own dangers to those already present, the condition of the patient becomes extremely grave. This sequence of events has been recently observed throughout all its phases by the writer, and will be further referred to in detail.

The ætiological significance of syphilis in the pathogenesis of heart-block has been stressed from time to time. That coronary thrombosis is essentially an acute phase superadded upon chronic arterial disease is generally accepted, and the association between heart-block and acute coronary occlusion would seem therefore to suggest that arterial degeneration is a more common factor in the production of heart-block than has hitherto been recognised. While in the instances here quoted the dissociation followed sudden restriction of the coronary blood-supply, it is likely that gradual changes in the same vessels would gradually produce the same effect, especially in

elderly subjects where little or no possibility of arterial compensation exists.

Gallavardin [3] has reported his observations of two patients with complete heart-block as a result of coronary thrombosis. In the first case, block supervened five days after the onset of illness and lasted for three days at the rate of 30 per minute. In the second case sudden syncope for several seconds concluded an attack of prolonged anginal pain, and for the following four days the pulse was regular at 42 per minute. Two other cases have been described by Wearn.[4] The first patient was found to possess the new rhythm on the day following the onset of pain. The second developed a partial heart-block after a few days' illness, complete block developing subsequently. In this patient changes of rate were accompanied at first only by pauses in the pulse, but later by fainting attacks as well. Frothingham [5] records a case in which the onset of epigastric pain and collapse were related to extreme heat. On the same day an electrocardiogram demonstrated complete heart-block at 40 per minute. The rhythm gradually returned to normal and ultimate recovery followed.

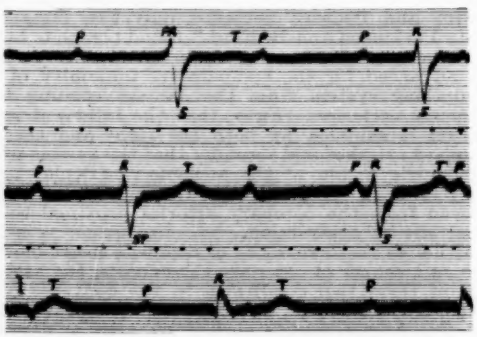
An account is given below of a patient suffering from complete heart-block with Adams-Stokes attacks, in whom coronary thrombosis supervened. Certain of the investigations made in this case seem worthy of record, in particular the charts of oral and rectal temperature. These and other aspects of the case are subsequently discussed.

Summary of Case.

The patient, a man of 59, was admitted to the Middlesex Hospital on Dec. 7th, 1929, complaining of fainting fits, breathlessness on effort, and pain in the left side of the chest.

History.—There was no significant family or personal history. In March, 1929, the patient had the first of a series of attacks in which he fell down unconscious.

FIG. 1.



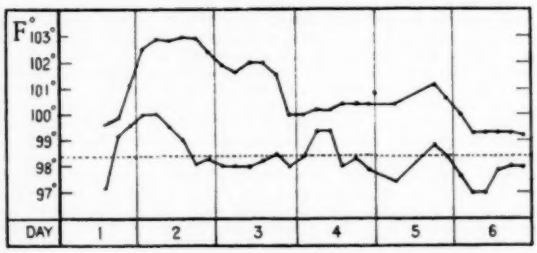
Electrocardiogram taken 20 days after the onset of coronary thrombosis in a patient previously suffering from complete heart-block. The curves show complete auriculo-ventricular dissociation with a left branch bundle block.

These seizures recurred at intervals until August when they became much more frequent, only a few days intervening between them. They were usually ushered in by dizziness, loss of consciousness for a few seconds following. Although their frequency was increasing, it was noticed that the attacks were becoming less severe. During October the patient began to experience pain in the left side of the chest and breathlessness on exertion.

Examination.—The patient did not appear ill or distressed. There was no fever, nor were there any signs of congestive failure beyond a faint cyanotic tinge in the face and slight pulmonary œdema. The rhythm of the heart was regular at 30 beats per minute. The heart was not enlarged. Distant heart sounds were heard at the apex and base, but no murmurs were detected. The arteries were moderately thickened and the fundi were normal. The blood pressure was 180/75. The urine was normal. Wassermann reaction negative.

Progress.—Two days after admission the patient had eight successive slight Adams-Stokes seizures, all occurring within an hour. In these attacks there was no loss of consciousness; they were preceded by sensations of faintness, dizziness, and swaying of

FIG. 2.



Temperature chart during the first six days after coronary thrombosis. The readings shown in the upper curve were taken in the rectum; those in the lower curve in the mouth. Note initial subnormal mouth temperature and subsequent wide disparity between oral and rectal temperatures.

the body. No pulse was felt at the wrist, nor were any heart sounds heard during the five or six seconds over which each attack lasted. Although the patient was put on barium chloride, gr. ¼, and subcutaneous injections of adrenalin, ℥iii., each thrice daily, two or three slight attacks occurred almost every day subsequently.

Onset of coronary obstruction.—Following two days of slight dyspnœa and vague pain in the left mammary region, there was sudden onset of pain over the lower third of the sternum and epigastrium on the evening of Dec. 20th. This persisted all night and had become very severe by noon on the 21st. Examined at this time the patient was restless and rather collapsed. There was profuse sweating of the head, neck, and chest; the complexion was greyish and cyanosed, and the extremities were cool and clammy. The pulse remained slow and regular. Increasing pulmonary œdema was observed.

Two hours later fairly frequent extrasystoles were felt at the wrist. The temperature by the mouth was 97·2° F. while that in the rectum was 99·6°. Oxygen by nasal catheter was followed by some improvement in the general condition. When the patient awoke after an injection of morphia gr. ¼, the pain was very much relieved although it returned with any slight effort. A leucocyte count 40 hours after the onset of the pain showed 22,000 leucocytes per c.mm. Subsequently, frequent temperature readings were taken in the mouth and in the rectum, showing well-marked pyrexia.

Three days after the onset there were pain and tenderness and rigidity in the right upper quadrant of the abdomen. The liver was not enlarged, nor had the signs of failure increased. Frequent tests of the urine showed no albumin or sugar. During succeeding days the liability to pain on movement gradually disappeared, and fever rapidly vanished. No Adams-Stokes attacks recurred after cardiac infarction had set in.

The leucocytosis reached a maximum of 28,000 eight days after the onset of the illness; three weeks later the count had fallen to within normal limits. Three days before the beginning of the myocardial necrosis the blood pressure was 165/110. Sixteen hours after the onset of the pain, while this was still severe, the reading was 200/75, the rate being slightly increased by occasional extrasystoles. Seven days later

the blood pressure reached the lowest figure recorded during the illness, 130/60. Another six weeks elapsed before the pressure had increased to 160/75.

Electrocardiograms.—In June, 1929, three months after the earliest Adams-Stokes attacks, the patient attended the National Hospital for Diseases of the Heart. An electrocardiogram taken at this time showed a normal rhythm; the T-waves were rather flattened, and there was some left ventricular preponderance.

The record shown in Fig. 1 was taken 20 days after the onset of coronary thrombosis. A normal auricular rhythm is present with a very slow independent ventricular rhythm. The form of the ventricular complexes points to a left branch bundle block. It is doubtful whether the branch bundle lesion is referable to involvement of the septum in the recent myocardial damage, or whether the combination of complete and left branch bundle block was present before acute coronary obstruction occurred.

Comments.

That the functional integrity of the conducting tissues is closely related to the adequacy of their blood-supply is demonstrated by the case described above and by others to which reference has been made. It might be expected that if permanent occlusion of one of the coronary vessels may result in permanent heart-block, transient ischæmia as occurs in angina might temporarily produce such a block. This, in fact, occurs. Gallavardin[3] has described a syncopal form of angina in which slowing of the pulse occurred during the attack, but in which this slowing could not be definitely established, as the normal rate was resumed at the end of the attack. Again, Huchard[6] has given an account of a patient who suffered from typical attacks of angina pectoris which were accompanied by vertigo and sometimes syncope. In one very severe attack the pulse slowed to 28 over a period of ten days, and later fell to 24.

Embolism of the coronary arteries has been described by Gallavardin and Dufourt,[7] who observed this unusual event in a patient of 63 who suffered from hypertension and cardiac enlargement with gallop rhythm. Severe epigastric and præcordial pain set in with progressive collapse and rapid death. During this final illness the pulse slowed to 28 and 22, and at autopsy an embolus was found in the left coronary artery at its bifurcation into circumflex and anterior descending branches. Three similar cases are cited by the same authors, the obstruction in each instance being at or very close to the bifurcation of the left coronary artery. The more proximal position of the occlusion in embolism as compared with that in thrombosis must explain the greater liability to heart-block in the former condition.

Febrile Reaction.

The febrile accompaniments of cardiac infarction are too well known to need any reiteration. The case just described illustrates these phenomena. Levine and Brown[1] have remarked that a patient during the onset of coronary thrombosis may have well-marked fever in an observation taken per rectum, while the mouth temperature is still subnormal. In the present case this difference was well shown, and four-hourly temperatures taken both orally and rectally were charted. These curves are reproduced in Fig. 2 and show a very pronounced disparity lasting over four days. While the mouth temperature was still subnormal that in the rectum was higher by 2·4° F.; within 32 hours of the beginning of the attack a difference of 2·8° F. was recorded, and when during the next 12 hours the mouth temperature fell to 98° F., the disparity was 4·8° F.

The explanation of these febrile phenomena is probably to be found in the combination of an acute inflammatory process and a state of collapse with sweating over the head, neck, and chest. The cooling of the periphery is exaggerated in the upper part of the body by heat-loss from evaporation. Conversely, within the pelvis, where heat-loss is reduced to a minimum, the febrile reaction due to acute necrosis in the myocardium is able to declare itself.

My thanks are due to Dr. C. E. Lakin for permission to use the notes and records of the case described; to Dr. G. E. S. Ward for the electrocardiographic report; to Prof. J. McIntosh for the leucocyte counts made in the Bland-Sutton Institute of Pathology; and to Dr. R. O. Moon for supplying information concerning the patient during his attendance at the National Hospital for Diseases of the Heart.

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Clinical and Laboratory Notes.

A PLATINUM RESISTANCE THERMOMETER FOR MEASURING THE TEMPERATURE OF THE SKIN.

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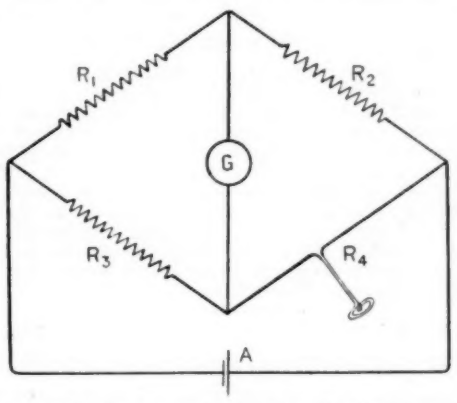
I HAVE devised a method for the measurement of skin temperatures by means of the platinum resistance thermometer which, I believe, is in several respects preferable to the more usual thermo-electric method, as described by Benedict [1] and others. The method has the following advantages: (*a*) the apparatus is portable, being contained in a case measuring 9 by 9 inches by 6 inches in depth; (*b*) the thermometer



A = Two-volt dry cell. R_1, R_2, R_3 = Resistances, each of 50 ohms. R = Resistance thermometer. G = Unipivot micro-ammeter graduated in degrees.

is robust, and may be applied by an unskilled operator; (*c*) the galvanometer is direct, reading in degrees Centigrade or Fahrenheit. The essential parts of the apparatus are shown diagrammatically in the figure.

The thermometer itself consists of a flat spiral of insulated platinum wire (No. 48 gauze) cemented to the end of an ebonite rod, and held in place by a thin film of celluloid varnish; the diameter of the disc applied to the skin is about 8 mm. With regard to the galvanometer, a micro-ammeter of the unipivot type is sufficiently sensitive. The thermometer, as will be

[1] Benedict, F. G.: Leopolding (Amerikaband), 1927, iv., 129.

seen, forms one arm of a Wheatstone bridge; a thermostat, therefore, is not required.

In making a measurement, it is necessary to bring the thermometer to a temperature as close as possible to the temperature of that part of the skin which is to be measured; this is conveniently done by holding the surface of the thermometer in the palm of the operator's hand for half a minute. The current to the bridge is then switched on; when the galvanometer needle has become steady, the thermometer is applied to the skin. A reading, accurate to 0·05° C., may be obtained within 3–6 seconds.

The apparatus may be obtained from Messrs. Griffin and Tatlock, Ltd., Kingsway, W.C. 2.

A CASE OF CARCINOMA OF BRONCHUS.

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A woman, aged 27, had a small hæmoptysis on Oct. 17th, 1929. This was followed by a slight irritating cough but otherwise there were no symptoms and she had previously been in good health. The cough continued and radiological examination in December showed a dense opacity in the middle third of the left lung. The shadow was continuous with the hilum and had a well-defined lobular margin; it did not extend into the apex of the lung.

Artificial pneumothorax was induced for diagnostic purposes and the mass was found to be intrapulmonary. Operation was performed on Jan. 8th, 1930, by Mr. Tudor Edwards. The lung was incised and a mass the size of a walnut was found in a bronchus. The bronchial wall was much stretched and thin so that it appeared as a capsule, but the growth could be shelled away except one portion where it appeared to be growing by a pedicle. It was successfully removed and the bronchus was ligatured. On section the growth was found to be carcinoma. The patient made an uninterrupted recovery and has now left hospital.

This case is similar to two cases [1] in which small pedicled growths were removed through a bronchoscope; in both these cases, however, the tumours were fibromata and non-malignant. In the present case the growth appears to have started as a small pedicled tumour and not in the usual form of bronchial carcinoma invading the bronchial wall. It is interesting to note that a considerable portion of the shadow seen by X rays was due to collapsed lung beyond the tumour, and it should be remembered that a large X ray shadow does not of necessity mean that the growth is large or inoperable.

[1] The Lancet, 1927, ii., 1180; and 1929, ii., 708.

Progress of Contributory Schemes.—Of the total income—£124,151—of the Merseyside Hospitals Council £108,253 was contributed by the Penny-in-the-Pound Scheme (227,626 members), which was more than was budgeted for from all sources. The income in 1929 was nearly double that of 1928. A contributory scheme for people of moderate means is being prepared.—Last year approximately £31,000 was raised by the Workers' Contributory Scheme in connexion with the East Suffolk and Ipswich Hospital; rather more than one-half of the money was subscribed in Ipswich and its environs. The subscription is 3*d.* per week. Sixty per cent. of the hospital's income is derived from this source.—At the second annual meeting on March 13th of the Merseyside Association of Hospital Contributors (Penny-in-the-Pound Fund), it was reported that during the year the fund raised £122,940. Of this, £92,000 was passed on to the Voluntary Hospitals and Radium Fund, £24,698 paid to poor-law and unassociated hospitals, and £3119 spent on convalescent and after-care services. It was decided that the Merseyside area should comprise districts within a radius of ten miles of Liverpool Town Hall.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

At a meeting of this Society held on March 24th the chair was taken by Mr. Donald Armour, the President, and a discussion on

Coliform Infections of the Genito-urinary Tract

was opened by Sir Thomas Horder. He excluded gross disease processes, such as infection complicating enlarged or malignant prostate, renal and vesical calculus and neoplasm, tuberculosis, stricture of the urethra, and infection following instrumental examination, but pointed out that these must be considered before any case was regarded as a primary infection. The avenue of invasion, he said, was notoriously dubious. The proof of a hæmatogenous route was slender and the sudden onset often quoted in its favour might be seen in catheter cases. Analogies with staphylococcal renal infections were dangerous, and the rare positive blood culture was not admissible as certain proof. It was always possible that the blood infection might be subsequent rather than precedent to the urinary infection. The lymphatic route was equally difficult to prove or deny. Highly suggestive facts were the proximity of the colon to the renal pelvis, the special tendency of the right kidney to infection, and its liability during pregnancy. An alternative lymphatic route was along the course of the ureter. It was unwise to conclude too hastily that the ascending route was not followed in some at least of the cases where the maximum intensity of infection was in the renal pelvis. The pelvis was the most susceptible part of the urinary tract, and even when the onset strongly suggested a pyelitic origin the bacillus might also be present in other parts of the tract. In some cases the prostate might be the tissue through which infection reached the tract, even in the absence of disease or enlargement. Some patients had severe dysuria and passed blood and pus in the initial stages with no clinical suggestion of pyelitis. It seemed certain that the prostate might be a source of reinfection. The fairly frequent association of disease in the alimentary tract with urinary infection was occasionally overstressed, but this was better than neglecting it; the alimentary defect might be a subinfection or an anatomical lesion or both. Proof of the presence of a coliform infection was very difficult if not impossible at present. The organic lesions actually found included diverticulitis, sepsis of the gall-bladder, appendicular disease—especially chronic infection accompanying mechanical disabilities—ulceration of the colon, and the grosser forms of enteroptosis. The association of constipation was almost universally accepted but very hard to prove. It was so common that many patients suffering from coliform infections of the urinary tract were bound to be constipated. The fact remained, however, that therapeutically it was useful to correct colon stasis. Some cases originated during or just after a period of looseness, but these should probably be interpreted as instances of bowel infection complicated by urinary infection. It was probably wisest to attach significance to the bowel subinfection rather than to the constipation. Important minor anatomical defects included piles and anal fissure.

The disease had many vagaries; it occurred at all ages, and varied in intensity from a mild pyrexia to stranguary with the passage of blood and pus. It might show itself as hæmaturia alone, or a complication like epididymitis might be the first thing that brought the patient under observation, or his condition might be diagnosed for years as "recurring influenza." Relapses were very common indeed. He visualised every transition in intensity from bacilluria, causing pyrexia and general toxic symptoms, and the most severe infection, leading to pyelonephritis or extensive

ulceration of the bladder. Most cases fell between these two extremes.

Treatment.

Here, as elsewhere, the fullest diagnosis must be made. The infecting agent must be known, but very often an organism that was bacteriologically "pathogenic" caused milder symptoms than one which was classified as *Bacillus coli communis*. The less readily the case yielded to general treatment the more cautious must the practitioner be in accepting it as a primary case, but it was difficult to decide what investigations of the urinary tract should be made. Sir Thomas Horder did not consider that a full routine examination in all cases was in the patient's best interests, and deferred cystoscopic examination until after a complete general treatment had been tried in patients who offered no clinical or radiological evidence of renal enlargement or gross disorder of the ureter and bladder.

X rays were useful in reviewing the alimentary tract. The good results of adjusting a defect in the bowel was sometimes very striking. Often enough, however, the most careful search failed to show any recognisable lesion. As he regarded the troubles of enteroptosis as due to circulatory and neuromuscular defects he did not advise colon-pexy, but introduced into the scheme of treatment such measures as corsets, massage, breathing exercises, and the semi-Trendelenburg position. That constipation should be dealt with effectively was agreed, though methods varied. The denudation of the mucous membrane, which was the physical mechanism by which aperients acted, could only be expected to encourage the auto-infection by which urinary infection was supposed to take place. "Changing the intestinal flora" sounded attractive, but how to accomplish it and the results of doing so were still unknown. Diet played an important part in the treatment of some at least of the cases; the protein should be reduced considerably, and game, eggs, and raw milk forbidden. Whey, butter-milk, cream, and even junket could be allowed; it seemed to be the casein residue that was harmful. This was admittedly empirical, but seemed to have good results.

A good number of these patients were neurasthenic; the corresponding condition in the child was perhaps precocity, often in an only and spoilt child. The adult frequently had a low blood pressure. The disease was much more common in private than in hospital practice and in professional than in business life, and was common in doctors. It might possibly be connected with irregular habits, hurried meals, lack of adequate rest, or exposure to infection; at any rate to combat these factors was part of the treatment. Of chemical remedies two stood out prominently: the simple alkalis and the hexamine group, the former in the pyrexial cases and the latter in subacute and post-febrile stages and in chronic cases. So successful was alkalisation that its failure should throw doubt on the diagnosis, and suggest the presence of some other factor. To a lesser extent the same was true of hexamine. To ensure the acidity of the urine, acid sodium phosphate was prescribed concurrently but separately—e.g., after food when the hexamine was given before food. In intractable cases it was a good thing to vary the form of the hexamine, as sometimes one kind seemed to work better than another. Intravenous agents such as mercurochrome had been tried, but without striking results. The method should, however, be used in those rare cases in which anuria or vomiting was present. Antigen therapy had not lived up to its original promise, but was worth trying in difficult cases. Some immunologists gave large initial doses, aiming at a reaction, but Sir Thomas Horder aimed at an amount just short of a reactive dose, believing the process to be an educational rather than a disciplinary one. Lavage was notoriously good for inflammation localised to the bladder, but irrigation of the renal pelvis was irrational and had not proved satisfactory. Direct surgical interference with the kidney had now been abandoned.

Mr. KENNETH WALKER then read the paper which appears on p. 681.

Experiments on Animals.

Dr. H. P. NELSON claimed that the pathological picture produced in the kidneys by an ascending infection differed essentially from that produced by a hæmatogenous infection, and described experiments that he had performed on rabbits. When he introduced about two thousand million colon bacilli into the bladder, after this had been prepared by pure turpentine, the blood infections were so transient, while the kidneys showed gross abscesses, that he was convinced that the blood infection was the result and not the cause of the spread to the upper urinary tract. The blood remained sterile in animals which had no kidney lesion, and he thought that the kidney and blood alike were infected through the ureteral lymphatics. Trauma was the deciding factor—apart from virulence of the organism and resistance of the host—in deciding whether an animal got its lymphatics infected or not. He suggested that the organisms entered the lymphatics through the urethral mucous membrane and not through the bladder. Rabbits which had received intravenous injections of colon bacilli might have their blood swarming with organisms and yet none could be found in the urine. Pyelitis was predominately a disease of the female rather than the male infant. The female urethra was buried at the bottom of a moist cleft and the napkin of the baby suffering from diarrhœa became saturated with virulent colon bacilli. It had been shown experimentally that bacilli from the urethra reached the kidney in an hour and a quarter, and it seemed unnecessary to blame the infant's colon. The argument against ascending infections was the absence of cystitis, but urethritis had not been excluded. The passage of organisms from the colon to the kidney had not been supported by experimental work; the kidney might be surrounded by a virulent abscess without getting infected. When the organisms were introduced into the bladder the lesions at post-mortem were cystitis of varying severity and abscess on the parietal wall of the renal pelvis, with hypertrophy and hyperplasia of the neighbouring mucosa. When the organisms were injected intravenously the lesions always consisted of inflammatory streaks in the papilla, which proved microscopically to consist of peritubular collections of polymorphonuclear leucocytes.

Discussion.

Mr. J. P. LOCKHART-MUMMERY agreed with Sir Thomas Horder that the most usual route, generally speaking, was the mucous membrane of the urethra, the reason probably being the unfortunate proximity of the urethral opening to the anus. He believed that most cases were due to primary infection from the large bowel. One of the conditions most frequently incriminated was hæmorrhoids; he thought that infection could only be conveyed from piles by the blood stream or the lymphatics if the surface were broken, and that it was never propagated by uncomplicated piles. A very common source was a fissure or fistula, which was often unsuspected and the treatment of which would generally cure the condition. He had never met with a case of diverticulitis unaccompanied by a marked coliform infection of the urinary tract; the route was difficult to determine but was, he thought, usually the lymphatics of the ureter.

Dr. T. JOEKES pleaded for a more extended trial of treatment by the bacteriophage of d'Herelle. One of the chief difficulties was the very narrow specificity of this series of organisms. He described his methods of cultivation in broth, the only successful medium. If bacteriophage was already present in the stools, as shown by its effect on the actual infective organism, a culture was made from the second filtrate and passaged very many times until it became virulent. If left too long in contact with the organism, tolerance was established. It

was essential that the urine be made alkaline for this treatment. Cases of seven or eight years' standing had been cured.

Sir THOMAS HORDER, in reply, regretted the commercialisation of the bacteriophage in France, and welcomed the attempt of a British pathologist to explore its possibilities. He mentioned Besredka's method of applying an antigen to the intestinal mucous membrane for dysenteric conditions; if only a part of what the French workers had claimed for it was true it should be worth trying on the urinary tract, particularly in vesical infections.

Mr. WALKER also replied.

HUNTERIAN SOCIETY.

ATHLETICS IN SCHOOLS.

AT a meeting of this Society held on March 24th, with Dr. ERNEST YOUNG, the President, in the chair, Dr. L. R. LEMPRIERE opened a discussion on Athletics in Schools; his paper is published in full on p. 679.

Dr. A. I. SIMEY, whose experience was based on nearly twenty-two years' work as school medical officer at Rugby, did not intend his remarks to apply to Rugby in particular. Boys at public schools, between the ages of 13½ and 18½, were passing through the critical stage of adolescence. The range of games played was a wide one, especially during the winter terms, and to these were added the exercise demanded by the officers training corps and physical training classes. Inter-school matches and competition between the various houses threw a considerable nervous strain on the boys and added to the difficulties of the doctor. The aim should be to preserve fitness of mind as well as body. Schools should be judged neither on the number of blues and internationals they could produce, nor on the number of their university scholarships; education was not measured by either of these standards. A healthy body did not necessarily imply an athletic body. The word "athlete" was derived from the Greek word meaning "a contest"; the corresponding adjective had the meaning "struggling, unhappy, wretched, and miserable." Our present system of school games was over-organised and pushed too far. Boys were taught to play everything in the correct manner, so that they undertook athletics for athletics sake rather than for the sake of body and mind. Spontaneity in recreation was essential; the most graceful games that could be observed were the unpremeditated acts of young cats and dogs rather than the behaviour of trained and bridled horses. The fact that the standard of football had risen in a school did not necessarily mean that it would produce better citizens. At present there was a perpetual egging on of boys to perform athletic feats in hours which might be devoted to some other form of recreation. When a boy was heard to express pleasure at being "excused games" it was a sign that he was overdriven. Most boys were delighted when a "non-compulsory changing day" was established; those interested in the arts or music had an opportunity to pursue their taste, and it was important that their development in these branches should not suffer. From the establishment of the Greek games in 776 B.C. to their abolition by Theodosius in A.D. 392, there was no evidence that the athletes underwent any prolonged training before the games.

Dr. HELEN BOYLE said that she also had sought the derivation of "athlete" but evidently in a different book, since the references to misery were omitted. Having its origin in "contention" athleticism now referred to all games. She had noted with interest that Greek boxers developed their muscles by delving in the earth, and regretted that this use for boxers had now lapsed. In England athletic competitions were begun at Sandhurst in 1812; in 1840 Rugby, Eton, and Harrow followed suit, and the first contest between Oxford and Cambridge took place in 1864. It was doubtful whether we had improved markedly as a race since the introduction of these sports. Athletics were essential to our present school system, but was it certain that the present system was the most desirable one? It was not for nothing that "mens sana" came first in the tag; it should not be forgotten that it was possible to have a healthy body with an unhealthy mind, nor that great mental capacity can coexist with considerable bodily infirmity. Every generation differed from the preceding one, and continual reconstruction was necessary to fit education to new needs. Civilisation was the art of living together, and education should be as fluid as life. Athletics were valuable in that they pictured the conflicts coming later in life. A famous head-mistress once said: "If you can come out for a duck and not look a fool you have done something." Games should teach a child how to be a fool and not look it. They also introduced unselfishness, with pleasant associations of the herd spirit and the approval of the herd. But at present there was not room for every type of personality to develop. A dislike for games was not a sign of depravity; they might sometimes hamper a child who was better free. The main use of a healthy body was the capacity of its owner to work, and one of the severest tests of health was work in confined ill-ventilated quarters without opportunities for exercise. The too eager cult of games led to a belief on the part of the child that anything useful or productive was not recreation—a poor psychological start in life. We must ask ourselves whether the present system produced the best citizens.

Administration of School Games.

Mr. H. M. ABRAHAMS said that the difficulty of the present system lay not with the games but with their administration. Physical interference in games was the fault of the masters, and the danger to the athletic boy was not of an enlarged heart but an enlarged head. Too much emphasis was laid on cups and trophies and too little on the effort which should be put into games irrespective of results. Boys should be taught the rudimentary principles of sports at school, so that they might develop later. The stop-watch and tape-measure should be abolished, and the position of games should not be out of proportion to their importance. Competition should be rare, and as many persons possible should be involved in all contests. Not less, but more attention was needed, so that all might learn the proper use of limbs and the rudiments of style.

Dr. ADOLPHE ABRAHAMS referred to the commonness of albuminuria in athletic subjects during adolescence and its rareness in the seasoned athlete. He went on to say that athletic schoolboys seldom materialised into famous athletes later; this was usually put down to "strained heart," but in reality no such condition existed. The schoolboy's heart was as elastic as his stomach. The period of deterioration or stagnation could be weathered if the boy were sufficiently determined, but comparatively few cared to make the effort. Compulsory games were an invention of the devil and should be abolished. Running was the normal form of exercise, and boys should be taught to run; after that they could play what games they pleased with a fair chance of success.

Effects of Training.

Group-Captain MARTIN FLACK said that he had examined many hundreds of boys between the ages of 17½ and 18½ for the Royal Air Force. Public school boys made good pilots because they had led an open-air life, they had learned to play the game, and they had never done sufficient work to ruin their eyesight. The value of athletics in schools was to overcome the disadvantages of the upright posture, which placed the main supply of our blood below the pump. Games should tend to strengthen the abdominal muscles, and to assist the flow of blood back to the heart, and therefore those games were most valuable which introduced the greatest amount of contortional

ability, provided always that the duration of the exertion was not too long. Respiration should involve the full use of the lower ribs, not of the upper chest merely. The proper results of training could be exemplified by an individual case :—

A recruit at his first examination had a pulse rate of 84; on rising slowly to his feet over a period of three seconds, the rate went up to 96 and returned quickly to 84; after standing five times on a chair it rose to 180; and fell to normal in 35 seconds. After two months' training the pulse rate was 72; on standing it rose to 84 and fell quickly to 72; on exercise it went up to 96 and returned to normal in 15 seconds; the blood pressure was: Systolic 126, diastolic 84. The heart was pumping a bigger load per beat and the diastolic pressure had risen. The vital capacity had increased by 280 c.cm.

Instability of the vaso-motor system, whether due to adolescence or other causes, was manifested by a delayed return to the normal pulse rate after exercise. As a result of such training the disadvantages of the upright position might be overcome. Before games were taught in schools boys should be trained to breathe.

Dr. CAMPBELL MCCLURE described the two groups into which boys fell: those who were muscular and stocky in build, and those with a long thorax and abdomen and an upright heart. The muscular type was liable to be overtrained at school, and the other type was often unsuccessful at games. Athletics were over-emphasised at schools; it should be remembered how few of our children earn their living by their legs.

Dr. GUSTAVE MONOD said that in France there were no compulsory games; the chief concern of the masters, who were legally responsible for injuries to their pupils, was to persuade them to play peaceably at marbles and to avoid the dangerous sport of running. He thought the English system fairly good, but it was a regrettable fact that he saw many veteran athletes at Vichy in search of a cure for adiposity. Centenarians, on the other hand, generally appeared to live in confined rooms, to profess a marked distaste for fresh air, and to smoke and drink heartily.

Mr. MARTIN ALDERSHAW proposed a vote of thanks, which was seconded by Dr. Currie.

ROYAL SOCIETY OF MEDICINE.

COMBINED SECTIONS OF DERMATOLOGY AND MEDICINE.

THERAPEUTIC VALUE OF GOLD COMPOUNDS.

AT a combined meeting of these Sections on March 20th Dr. S. ERNEST DORE, who presided, remarked that the subject presented some difficulties. For example, the ætiology of lupus erythematosus was uncertain; some regarded it as a tuberculous affection, others as belonging to the tuberculous group, still others as due to a streptococcal toxin arising from a focus in a distant part of the body. In this disease it was, he presumed, only those cases in which the tuberculous ætiology was not in doubt that were treated with gold compounds; and even then there seemed to be differences of opinion as to their value. Some regarded them as being as specific in lupus erythematosus as were arsenobenzol preparations in syphilis; on the other hand it had been stated that these gold compounds were so toxic as to be unsuitable for routine use. Some thought they gave rise to fibrosis and were beneficial on that account.

Prof. S. LYLE CUMMINS said he would not deal with dermatological conditions, although experience with these drugs in medical practice might have a definite bearing on dermatological practice. Most new preparations opened with a phase of great hope, followed by oblivion; but the gold compounds met with discouragement from the start, and only careful animal experimentation and very gradual human use had brought them through that era of doubt into a position of practical medicine. There could now be no doubt that gold was a chemical substance which exerted a selective action on tuberculous lesions, and was therefore of therapeutic value in tuberculosis. In his own hands it had given satisfactory results in all the patients on whom he had tried it. It was true they relapsed afterwards; the drug could not be regarded as a cure. It was important to obtain a clear idea of its mode of action; otherwise treatment would remain empirical. Mollgaard found that sanocrysin had an effect on the tuberculous as different from its action in the healthy, as Koch had found to be the case with his tuberculin. The action, which seemed to be on tuberculous foci rather than upon the bacilli themselves, was catalytic—i.e., it speeded up processes of cure which had before been going on slowly. When gold was given skilfully in suitable cases patients tended to improve in regard to temperature, weight, and general condition, with a decrease in sputum, and the number of bacilli excreted; in fact the sputum might dry up for the time being. The success of treatment seemed to depend on the degree to which the patient was able to neutralise or tolerate the toxic substances set free in the circulation as a result of focal hyperæmia. Hence the individual dose given must vary according to the phase of the disease. Always acting within the limits of the *dosis tolerata* (the dose which could be given to a healthy person without risk of metallic poisoning) the selection of the proper dose for the patient depended on the laws regulating vaccine therapy rather than on those applicable to drugs without a chemotherapeutic action. With the advent of heavy metal therapy in tuberculosis, it was essential to have a method of assessing cases. Among the surest guides were temperature, body-weight, the amount, character, and bacillary content of the sputum. Promising lines of work were the blood changes in tuberculosis and a better appreciation of tuberculin sensitivity. The main lessons he had learned from his animal experiments was that the disease must have become localised into a lesion for the gold to have a definite action.

Discussion.

Dr. A. C. ROXBURGH and Dr. H. CORSI presented the results of their experiences with these drugs at St. Bartholomew's Hospital. Krysolgan, they said, had a gold content of approximately 50 per cent. by weight, and the dosage varied between 0·0015 and 1·5 g. The dose of sanocrysin which had a gold content of 40 per cent. was 0·05 – 0 25 g. intravenously. In the series of cases related no local treatment was used except calamine lotion. Krysolgan was said to kill tubercle bacilli in dilutions of 1 in 100,000, and to inhibit their growth in a strength of 1 in a million; 29 g. had been used spread over 43 injections extending over 20 months. Most of the cases of lupus erythematosis treated had been of the chronic fixed type. The longest duration of the disease before gold treatment commenced was 20 years, the shortest period was one month, the average period being seven years. In one series, 19 females and 16 males were treated, and the ages ranged from 18 to 61. In all, 35 cases of lupus erythematosus were treated with gold, four cases of Bazin's disease, one of papulo-necrotic tuberculide, one of erythrocyanosis frigida, and one of pityriasis lichenoides varioliformis acuta. Of the 35 cases of lupus erythematosus, 23 were either cured or very much improved, while two were slightly improved, in five there was no change, and five were worse after the injections. Six among eight of these cases which had been regarded as cured relapsed in a few months. In 12 lupus erythematosus cases the Mantoux test was positive in nine, negative in three. Toxic reactions followed 6 per cent. of the injections, but none of these lasted long nor were they serious in nature. There seemed little to choose, Dr. Corsi said, between the two drugs, though perhaps sanocrysin was somewhat the better, as it could be given in larger doses without risk. It could not be said that the gold compounds were a cure for lupus erythematosus, but it was a great advance to be able even to improve cases of such a stubborn condition as this.

Dr. C. J. MARSHALL said he had used sanocrysin since it was first advocated, and he had seen the earlier cases treated in this way in Copenhagen. He was struck by the different reaction obtained according to the length of time that the patient had been suffering from the infection. His experience supported that of Prof. Cummins in his animal experiments—namely, that good results ensued when a definite time had elapsed between the original infection and the beginning of the treatment. When first introduced sanocrysin was used for all kinds of cases, and the speaker saw some disastrous results. His practice now was to delay the use of sanocrysin for a year from the commencement of symptoms. Dr. Marshall thought it would be a mistake to be afraid to give sanocrysin because the patient was febrile when at rest; he had had good results from it in such cases. He would not claim to have cured any patient of pulmonary tuberculosis by gold injections; he had had many cases in which the symptoms had ceased after courses of the treatment, but they relapsed, and relapse took place quicker than after constitutional treatment. But preparations of gold had proved of value in getting patients fit to undergo constitutional treatment.

Dr. H. W. BARBER said he had treated a large number of cases of lupus erythematosus in the last few years with gold compounds, commencing with krysolgan, going on to sanocrysin, and later to solgarnol, the latter being considered less toxic and more efficacious than the other two. Though it was his custom to commence with small doses, and increase them cautiously, it was worth while, when dealing with a resistant patient, to give a "knock-out" dose, always provided no lung tuberculosis could be detected. Some of his tuberculide cases had done well under the gold treatment, but he could not claim that it had cured any of them. He had seen more toxic reactions after sanocrysin than after the other preparations. After solgarnol he had seen a generalised lichenoid rash in a patient with pulmonary tuberculosis who was brought to him because of the rash. Summing up his experience, he said the gold treatment of lupus erythematosus was satisfactory up to a point; some of his cases had remained quite well after it for two or three years, but many had relapsed.

Dr. J. E. M. WIGLEY said his experience of the gold treatment for skin diseases was entirely limited to sanocrysin, and the only disease he had treated in this way was lupus erythematosus. Of 21 cases so dealt with, only one was unaffected by the treatment; none was made worse by it. In some of the improved cases, however, the effect was only temporary He described several cases.

Dr. H. MACCORMAC said it was a pity some principles could not be formulated in regard to lupus erythematosus on the same basis as those of Prof. Cummins had in regard to general tuberculosis; it was difficult to decide whether these lupus cases were tuberculous or not. There was a big difference between lung lesions and skin lesions; in the latter, being on the surface, half the possible reacting area was cut off, and that was one reason why the dermatologist had difficulty in securing results. He had tried sanocrysin in two or three cases of lupus vulgaris, and in a recent paper Dr. Haldin Davis spoke highly of these injections for that disease. In the speaker's cases of lupus vulgaris there was definite improvement after the injections, but nothing like to the same extent as in lupus erythematosus. He regarded gold compounds as a valuable part of treatment, as they achieved improvement in cases which were resistant to every other form of application.

Dr. W. N. GOLDSMITH said he had treated by means of some gold preparation every case of lupus erythematosus which had come to him since 1925. The vast majority had reacted well, some apparently remaining cured over a period of three years. Most of them had relapsed, but they again benefited when the treatment was resumed. On account of reports of its toxic effects he had not used sanocrysin much, preferring krysolgan, triphal, orophos, and lutean. He had tried metallic colloidal gold and found it had no effect whatever. The dosage was puzzling; he had generally used tiny doses. With triphal he seldom exceeded 1·5 g., the quantity given being graded by the patient's response. Most of the cases did well, apparently in spite of the absence of a clinical focal reaction. Triphal was the most rapid in its effect and the only toxic effect he had seen was a little malaise. If a patient had a focal reaction, the speaker stopped the drug. As yet there was no guidance as to how long the treatment should be continued with the view of preventing relapses.

Rep'y.

Prof. CUMMINS said that the patients referred to by Dr. Goldsmith as having no definite lesion would probably be found to have small hyperæmic areas.

Dr. CORSI said that no knock-out doses were given in the cases dealt with in the paper he read, and even then there were a good many symptoms. The dosage used by Dr. Roxburgh and himself never exceeded 0·25 g. Mollgaard had stated that it was not the gold ion which was circulating, but a complicated ion, AuS_2O_3; it was this which had the power of diffusing through the avascular tissue which surrounded the tuberculous follicle. Possibly a pure gold ion would not have the same penetrating capacity.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.

AT a meeting held on Feb. 25th at B.M.A. House, Miss FRANCES HUXLEY being in the chair, Dr. FRANÇILLON LOBRE spoke on the

RADIOGRAPHY IN STERILITY.

She said that the method of tubal insufflation, widely employed in the United States, was much less exact than was the radiographic method. It merely showed whether the tubes were, or were not permeable, while examination with lipiodol not only showed an obstruction impairing tubal permeability, but revealed its situation, which was a point of capital importance if reparative surgery were contemplated. The radiographic method also supplied information concerning the exact position of the uterus, its form, and the aspect of the tubal and uterine cavities. It likewise showed the condition of the mucosa and its reactions to lipiodol. These were valuable therapeutic indications for the treatment of sterility, since they show the importance of uterine and tubal spasm in a large number of the cases thus examined.

Lipiodol, she said, was well tolerated by the tubes. Rubin had described some cases in which the radiographic method was followed by peritoneal reactions, but it was possible that the cases of infection recorded had followed the use of a liquid other than lipiodol. Laparotomies had been performed upon women who had received injections of lipiodol 48 hours previously, and no sign of peritoneal inflammation had been encountered. In certain cases where mistakes in technique had permitted injections to be made under too high pressure, small collections of oil had been found in the connective tissues, but no sign of inflammation. It was necessary to keep the pressure under strict control, but with lipiodol the pressure employed might be higher (up to 30 cm. of mercury) than was permissible when air was insufflated (up to 23 cm. of mercury). Gases which were easily compressible might induce a pressure at the point of resistance higher than that at the point of escape, and it was therefore logical not to exceed an initial pressure of 23 cm. for insufflation, in spite of the fact that a much higher pressure was required to produce experimental tubal rupture. In collaboration with Dr. Jean Dalsace, Dr. Lobre had examined 230 women for sterility during the last three years. The cases examined were those in which a preliminary examination of the husband had eliminated the male

factor, and in which careful clinical examination of the woman had proved negative. Contra-indications to radiographic examination were the presence of active lesions, such as those accompanying metritis, salpingitis, appendicitis, or metrorrhagia. The best time for the exploration was during the week following menstruation, from the fourth to the twelfth day. At this period adnexal reactions could be most effectively avoided, and, moreover, the risk of injecting during pregnancy was eliminated by choosing a time shortly after menstruation had occurred.

The patient had to be prepared for the examination with the greatest care. It was necessary to be sure that the cervical orifice was permeable for the introduction of a sound, since radiographic examination must never be immediately preceded by dilatation of the cervix. The examination itself must be made with the care and precautions due to minor gynæcological procedures, and the patient must remain in the hospital or clinic for a few hours before returning to her home. This was essential in order to ascertain whether the tubes were or were not permeable. A second radiogram had to be taken a few hours after the first one to see whether the shadow still remained in the tubes or was disseminated in patches in the abdominal cavity. The gynæcologist and radiologist must collaborate in the examination, which was not painful. The only disagreeable moment for the patient was when the cervix was grasped with the forceps in order to close it, since injections made to study sterility must be made under pressure. The pressure employed must be regulated with a manometer, and must not exceed 30 cm. of mercury. By prolonging the pressure sufficiently it was often possible to restore permeability to otherwise impermeable tubes. Examination must be made patiently and without haste. The passage of lipiodol into the cervix and then into the tubes, which it entered through the mechanism of the uterine contractions, must be followed radioscopically on the screen.

To avoid pain, Dr. Lobre said that she was in the habit of giving sodium bromide or benzyl benzoate for two or three days before the examination, and a suppository of hempynal was introduced one and a half hours before the examination, which was immediately preceded by swabbing the cervix with a solution of novocain. The opaque substance used was 40 per cent. lipiodol, rendered more liquid by warming on the water bath. Many instruments had been devised for injecting lipiodol, that constructed by Dr. Lobre consisting of a cannula of very malleable nickel-plated copper, bearing a tip shaped like an olive, with a terminal orifice and two large lateral eyelets. The cannula bore a flattened shoulder, situated 4½ cm. from the tip, designed to prevent it from passing too deeply into the uterus. At the other end of the sound there was a three-way cock, bearing two threaded tips. The metallic syringe was attached to one end of the tips, while upon a lateral tip was fitted a sterilisable tube containing a piston attached to which was a manometer. The patient was placed on the table lying on a draw-sheet, which enabled her to be moved easily. At the end of the table were two movable stirrups, which permitted her to be placed in the gynæcological position. The vagina was irrigated with an iodised injection, and the cervix then exposed by a bivalve speculum. It was swabbed with alcohol and grasped with the tenaculum to permit easy introduction of the metal sound. If the cervical os was large it could be closed with a large forceps, with the grasp directed backwards. If small it could be closed with the aid of one or two bullet forceps. The oil was injected slowly, at a pressure never exceeding 30 cm. Care must be observed not to permit reflux into the vagina. The speculum should then be removed and the patient pulled into the middle of the table by means of the draw sheet.

For radiography the Coolidge or Phillips tube was employed, one tube being beneath the table for examining radioscopically with the patient recumbent, and for making plates during the examination, a plate being placed on the abdomen. Plates were also made of the pelvis, both from the front and the side. When the course of the tubes was masked by the uterine cavity an oblique exposure was taken. It was possible to take anterior or posterior plates without changing the position of the patient. The plates were developed immediately and before the sound was withdrawn. In this way the work might be repeated, if not wholly successful the first time. It was absolutely necessary to follow on the fluoroscopic screen the intra-uterine course of the injected lipiodol to observe the filling of the uterus, the successive aspects of the injection, the advance of lipiodol into the tubes, and its entrance into the peritoneal cavity. These details were clearly visible by making use of the Potter-Bucky diaphragm and of a fixed or mobile grill.

Dr. Lobre then proceeded to illustrate on the screen the information which could be supplied by radiographic examination—anomalies of development and variations in the form and dimensions of the uterine cavity and in the position of the uterus. Examination showed alterations of the uterine mucosa, polyps, submucous fibromas, tumours, and other conditions which might require curettage; also the sensitiveness of the uterus and the irritability induced by application to the mucosæ of severely caustic agents. Lesions of the tubes, which might escape detection by clinical examination, could be shown, notably those causing impermeability of the cornu, or at the isthmial region. Variations of the length, calibre, and form of the tubes could also be observed. The contractions which were clearly visible in normal tubes did not occur in diseased tubes, which were distended with lipiodol, which they retained for a very long time. In certain sterile women the tubes were firmly fixed by adhesions, remaining always immobile.

Conclusion.

Such were the lessons, anatomical and physical, revealed by hystero-salpingography. However highly the method might be perfected it would never constitute a specific treatment for sterility, since some forms were not of a mechanical type. The method confirmed and precisely demonstrated the clinical findings, and likewise supplied data giving rise to new medical and surgical methods of treatment. For combating uterine or tubal spasm, we might employ antispasmodic agents, such as belladonna, atropine, benzyl, or the bromides might be used. Tubal atony might be treated with gynæcological massage or diathermy, which were equally useful in uterine displacements. If the tubes presented unduly small calibre they might first be rendered permeable by injecting them with lipiodol, and their dilatation might then be attempted by repeating insufflation for a sufficient number of times.

Restorative Surgery.—Before undertaking operative measures designed to combat sterility, hysterography should be practised. Ligamentopexy or stomatoplasty should not be attempted without being assured that the tubes were permeable. If permeability was not present an attempt should be made to restore it. Twenty operations of this kind had been undertaken by Dr. Lobre, following advice based on radioscopic findings. Thus far the results had not been satisfactory, and in no case had pregnancy followed surgical treatment. Operation had generally proved to be too late, and had revealed old and already organised lesions. In the future operation must be done earlier, indications must be more clearly defined, and technique must continue to improve. Radiographic examination not only permitted ætiological diagnosis, but often sufficed in itself to constitute the treatment of certain forms of sterility. Various statistical records had shown, like those of Dr. Lobre, that pregnancy might be obtained in about 10 per cent. of the cases examined. While this might seem a very modest result, it must be remembered that the method was resorted to when every other method

had already failed. Again, the figure of 10 per cent. was a gross figure, and included the cases in which the tubes were permanently obliterated. In many cases tubes originally considered impermeable proved capable of receiving injections, provided that the cervix was well drawn down and the pressure continued for a sufficient time.

By following the principles described by Dr. Lobre, she and her colleague had obtained 23 pregnancies following 230 injections with lipiodol. In three of these successful cases a second pregnancy had occurred, and in one case a third. There had been only one case of extra-uterine pregnancy.

Discussion and Reply.

The PRESIDENT pointed out that the method might not be very easy to apply in private practice where facilities for re-examination after three or four hours might not be easy to obtain.

Lady BARRETT inquired how it could be ascertained with certainty that no infection of the tubes existed. Was Dr. Lobre confident that forcible injection into the tubes was safe?

Prof. LOUISE MCILROY expected to get more than 10 per cent. of successful results with douching and other methods, including insufflation. It was sometimes difficult to detect pus in the tubes, and if injections were made in the presence of a pyosalpinx trouble was to be expected. A closed tube had possibly been the subject of inflammation at some time.

Miss L. MARTINDALE asked what results had been obtained by Dr. Lobre by means of artificial insemination.

In reply, Dr. LOBRE said that some gynæcologists sent patients to a radiologist and allowed them to go straight home, but she preferred them to lie in bed for one or two days, and the examination, therefore, must take place either in a hospital or clinic. None of the patients had had a rise of temperature after the injection. She had had no successful cases after artificial insemination. The results after lipiodol were possibly better than they appeared to be, because hospital patients did not always report subsequent pregnancies.

Dr. JANE WALKER proposed, and Prof. MCILROY seconded, a vote of thanks to Dr. Lobre for coming to London to give this valuable address.

MEDICINE AND THE LAW.

Dr. Knowles's Appeal.

THE successful appeal of Dr. Benjamin Knowles raised a large issue but did not adequately determine it. Employed as medical officer by the administration of the Colony of Ashanti, he was found guilty of murder and was sentenced to death in November, 1928, by the Acting Circuit Judge, who tried the case without a jury. The death sentence was commuted by the Governor of the Gold Coast, and a year ago Dr. Knowles was granted special leave to appeal to the Judicial Committee of the Privy Council. Last November his appeal was heard and his conviction was quashed, and now in the present month the Judicial Committee has announced its reasons. The foremost and, as it seemed, the strongest of the four grounds of appeal was the contention that the court in Ashanti had no jurisdiction to try the appellant upon a capital charge without a jury. Professional men, contemplating service oversea, may indeed have realised with surprise that one of the risks of such service is the absence of the accustomed judicial safeguards. In Ashanti trial by jury is unknown. The local criminal procedure is governed by an Ordinance which prohibits the employment of barrister or solicitor. This Ordinance somewhat vaguely applies to Ashanti the law of the Gold Coast Colony; in the latter Colony, trial by jury would be imperative where the alleged offence is a capital charge; the Ordinance, however, applies the Gold Coast law to Ashanti only "so far as it is practicable and local circumstances permit." The Judicial Committee now declares that practicability and the state of local circumstances are questions which can only be determined in Ashanti on the spot. The appellate tribunal in Downing-street says it can form no opinion on these questions; their lordships assume that the proceedings against Dr. Knowles in Ashanti were in order, and that, if he was not tried by a jury, that was because a jury was not practicable in the state of local circumstances. Thus the final stage of the Knowles case contributes little to the problem which the earlier stages had forced upon public attention—the problem of the legal rights of British officials serving in remote places oversea.

It would, of course, have been administratively inconvenient if the Judicial Committee had held that Dr. Knowles should have been tried by a jury. Many existing convictions might have been invalidated; arrangements would have been required in many places to remit to more populous centres an accused person charged with a serious offence; racial issues might have been raised by questions of the selection of jurymen. Equally it would have been forensically inconvenient if the Judicial Committee had held that Dr. Knowles's trial must be reviewed upon the facts; the result would have been that their lordships would have been overwhelmed by avalanches of appeals from all over the Empire; their well-established rule is not to intervene in criminal cases unless there is either some want of jurisdiction in the court of trial, some disregard of the forms of legal process, or some violation of the principles of natural justice with its resultant injustice. The final judgment in Dr. Knowles's case avoids the inconvenience of multiplying prospective appeals; it fastens upon one point peculiar to his trial and it offers no general encouragement to other appellants. The Judicial Committee's pronouncement may thus be paraphrased: "This appeal came to us primarily on the issue of trial by jury; we reject that issue as a ground of appeal, but, having examined the proceedings, we find that the Acting Circuit Judge misdirected himself; we are not an ordinary court of criminal appeal, we are not considering if the evidence supported the verdict, we are not saying what our own verdict would have been, but we find that the Judge summed the case up to himself in a manner which would have been misleading if he had been summing it up to a jury." A shot was heard, it will be recalled, in the room where Dr. and Mrs. Knowles were alone together; Mrs. Knowles, after saying it was an accident, died of a bullet wound; Dr. Knowles said there had been a domestic fracas; she had been nagging him, and he had said that, if she did not stop, he would put a bullet in her. The Judge rejected any idea of the wound being either self-inflicted or due to accident; he held that the shot had been fired by Dr. Knowles; he decided in consequence that murder had been committed. The Judicial Committee says that to fire a shot in a fit of drunken recklessness to silence a nagging woman would be a crime, but the crime might possibly have been manslaughter, and not murder. The Judge never dealt with the possibility of mere manslaughter; the appellate tribunal, observing this omission, is not satisfied that the evidence reached the standard of proof necessary for a conviction for murder. And so Dr. Knowles has won his appeal. Persons not learned in the law may wonder that it should be so complicated a process to set aside what was evidently an unsatisfactory conviction.

COVENTRY AND WARWICKSHIRE HOSPITAL.—This institution last year treated 14,305 accident cases. There were 5099 in-patients and 24,917 out-patients. Nearly 800 patients were sent to the Alcock Convalescent Hospital, which has added £3250 to the annual expenditure. The income, at £40,895, showed a deficit of £3464. The Godiva pageant produced £5000.

Reviews and Notices of Books.

TRAUMA, DISEASE, COMPENSATION.

A Handbook of Their Medico-Legal Relations. By A. J. FRASER, M.D., Workmen's Compensation Board, Winnipeg. London: Macmillan and Co., Ltd. 1929. Pp. 524. 28*s*.

THIS book is written mainly for that large body of medical practitioners who are occasionally called upon to express opinions on the relation between "an accident arising out of and in the course of employment" and the disability which prevents the patient from working. The writer has been for 12 years the chief medical officer of the Manitoba Workmen's Compensation Board, but his book contains all too few of his own personal opinions; instead he gives lengthy quotations from text-book authorities on every aspect of the questions under discussion. The subjects are further illustrated by the findings of various courts in different parts of the world. Most of the decisions recorded are those of the Manitoba Compensation Board, but there are many from the English courts. It is noticeable how much more elastic are the rules governing procedure in the Canadian Workmen's Compensation Boards than those of our own county courts. In Canada each case is decided strictly on its merits, whereas here so many adjudications are bound by decisions given upon the merits of some case heard long ago.

In the first chapter a clear explanation is given of the exact meaning of "an accident arising out of and in the course of employment." The responsibilities of the employer and the employee are set forth and, what is often forgotten, the responsibilities of the workman to his master. It is explained that if an injured workmen is unreasonable in refusing to undergo operation or to attend hospital, or even to do light work, thus retarding or preventing his recovery, he may be held no longer entitled to compensation. Where disease is alleged to be due to accident, rules are laid down for the guidance of the medical jurist. To establish any causal relation between the accident and the outbreak of disease there must be a direct sequence or march of events. Where an interval of recovery occurs, the presumption is absolutely against the causal connexion with the injury. In the chapter on the heart and blood-vessels the well-known "spanner case" is given at length. In this case judgment was given for the dependents of a man who died suddenly whilst commencing to screw a nut with an 18-inch spanner. (Clover, Clayton and Co. *v.* Hughes, 3 B.W.C.C.) It was held that although the man had an advanced aortic aneurysm and was liable to sudden death at any moment, it was the slight strain of turning the spanner which was the immediate cause of the rupture of the aneurysm. The author notes that "such precedents in a large and ever-growing class of marginal cases of industrial liability have so extended the horizon of compensation law that it is difficult, or impossible, to indicate where the boundaries of industrial liability are to be drawn." This is obviously true, and it is the more remarkable that few employers seem to have any organised method of classifying their workers according to their age and physical capacity, and selecting the physically fit for the heavy and laborious tasks. In the absence of such a scheme the old man or the impaired man falls out by the way, often as the result of some single undue effort. This failure to fit together in the best way the flesh and blood components of the industrial machine explains in some measure the ever-growing army of pensioners carried by industrial boards.

If any section deserves special mention it is the chapter on hernia. The liability for hernia is always a difficult matter to decide, and the description of the condition and the rules laid down for determining its relation to accident are excellent.

The medical jurist will find real help and guidance in this book when he is confronted by a case of unusual difficulty, and practitioners will consult it with profit on any question arising out of the preparation of medical reports in cases of accident.

OBSTETRICS.

Clinical Obstetrics. By PAUL T. HARPER, Ph.B., M.D., Sc.D., F.A.C.S., Clinical Professor of Obstetrics, Albany Medical College. Philadelphia: F. A. Davis Company. 1930. Pp. 467. $8.00.

UNLIKE so many new books on subjects whose literature is extensive this is no recapitulation of standard text-book teaching. In the author's own words, it is "a story of individual reaction to obstetrical problems as they have presented themselves . . . . deductions that individual situations seem to warrant replace extended comment and multiplicity of views." Of particular interest are the author's views on Bandl's ring and difficult labour. There is little doubt that a contraction ring is much more frequently the cause of difficult labour than is generally recognised. The text is freely illustrated by thumb-nail diagrams which often hinder rather than help the reader. The style is not very clear; in some places perfectly simple facts are so lost in a maze of words that the reader fails to realise that some well-known phenomenon is under discussion and imagines himself to be digesting some new and original idea.

This is no book for any but the advanced student. By careful concentration he will learn new conceptions of his problems, some of which he may accept. It is a pity that an author with so much to say is unable to present his learning in a more convincing manner.

Nurses Handbook of Obstetrics. By LOUISE ZABRISKIE, R.N. London: J. B. Lippincott Company. Pp. 535. 12*s*. 6*d*.

THIS is an American book written for American nurses who take midwifery as part of their general training. It is not written for the practising midwife, and hence the teaching is largely theoretical. It might be described as an elementary text-book of obstetrics to which has been added mothercraft and home nursing. The author seems to have given a great deal of attention to practical aspects of home nursing, and many valuable suggestions are given as to the uses of domestic articles in the labour room. Minute details are given about the toilet and clothing of the infant.

The nursing details will be read with interest and profit by midwives and social workers, but it is difficult to see a place for the rest of the book in any other than its national environment.

ECLAMPSIA.

The Improved Prophylactic Method in the Treatment of Eclampsia. Third edition (first English edition). By Prof. W. STROGANOFF. Edinburgh: E. and S. Livingstone. 1930. Pp. 154. 10*s*. 6*d*.

FEW important therapeutic measures have been less well understood than Stroganoff's improved prophylactic method in the treatment of eclampsia. At intervals, Prof. Stroganoff has published papers in the medical press of this country in which he showed that his results were far superior to any obtained by other workers. He has travelled abroad to advocate his method, but his most willing disciples have had difficulty in understanding exactly what his method entails.

When Prof. Stroganoff visited this country in 1924 his knowledge of our language was small. Realising the difficulty of accurate translation, he started at an advanced age to learn English and now presents a book written by himself in English. He begins by answering his critics and reviewing the history of the treatment of eclampsia. He then explains at length

the rationale of his method, the results of modification, and discusses his own results. Twenty-five pages are devoted to typical cases, and he concludes with a detailed scheme of treatment which none could fail to understand. It is almost unnecessary to remind our readers that Prof. Stroganoff has treated 320 cases of eclampsia with a mortality of 2·6 per cent. and has had a consecutive series of 166 cases without a death. This result speaks for itself. Eclampsia is now a comparatively rare disease, yet in 1928 the Registrar-General reported that there were no less than 557 deaths from puerperal albuminuria and convulsions in England and Wales. If Stroganoff's results can be repeated in this country, this number should be reduced to a fraction of its present size.

This book is an important addition to the literature of obstetrics, and should have the widest possible circulation.

THERAPIE INNERER KRANKHEITEN.

By Prof. Dr. A. GOLDSCHEIDER. Berlin: Julius Springer. 1929. Pp. 420. R.M. 28.80.

THIS volume offers a concise review of the treatment of medical diseases from the pen of one who has had for very many years good opportunities of studying them. Prof. Goldscheider has not attempted to include more than a passing reference to either ætiology or diagnosis, and has throughout maintained an admirably practical outlook on treatment. Therapeutic methods which have little application in general practice, or those which have not yet been tried out, receive scant attention. In the introduction the author warns the practitioner against too wide a use of ready-made combinations of drugs and preparations such as appear to be so popular in Germany to-day; simplicity is aimed at in the prescriptions set out, though proprietary preparations are not unduly neglected. The book is divided into a preliminary section on general therapy including the treatment of fever, pain, insomnia, and anorexia, with a brief summary of physicotherapy. The second section on special therapy contains chapters on the treatment of diseases of all the main systems of the body in which all the commoner conditions are fully described. Children's diseases are not included. The indexing is not very full and there is no means of referring directly to any special drug. English readers will be compelled to transpose prescriptions from the metric to our own system. This volume provides a balanced and concise account of practical treatment and is well representative of the present-day outlook of German physicians.

IMMUNOLOGY OF PARASITIC INFECTIONS.

By WILLIAM H. TALIAFERRO, Ph.D., Professor of Parasitology, University of Chicago. New York: The Century Company. 1929. Pp. 414. 25*s*.

OWING to the dominant morphological viewpoint adopted by many past investigators, the value of immunity studies in protozoology and helminthology has been unduly depreciated. By grouping in orderly fashion so heterogeneous a collection of immunological data as is presented in this volume, Prof. Taliaferro has made an important contribution to medical literature and one which should focus the attention of tropical workers in particular on the deficiencies and gaps in present knowledge of this important subject.

Many phases of parasitism and immunity are unfolded in this volume, including some interesting comments on the environment of parasites compared with free living animals. Special chapters are devoted to lysins and reproduction-inhibiting antibodies in relation to the types of infection in trypanosomiasis and malaria, and also to the protective and curative action of immune sera in certain protozoan infections. The cellular basis of immunity and the nature and production of immunity in parasitic diseases are dealt with.

The serological reactions reviewed include the complement-fixation and precipitin tests; by these means specific antibodies have been demonstrated in many protozoan and metazoan infections. In man they are of proved clinical value only in hydatid disease and schistosomiasis, though in the author's opinion there seems to be considerable promise that they may be applied to amœbiasis and trichiniasis. Three types of skin reaction are described all of which depend upon a hypersensitive condition of the host. Of these there is little evidence that true local anaphylaxis or the Arthus phenomenon ever occurs in parasitic infection, but unquestionably both the immediate wheal and the delayed response occur in man and animals infested with helminths. As these reactions are not necessarily correlated with humoral antibodies, skin tests and serological reactions should be conducted simultaneously.

This volume is written with judgment. It is well indexed, and possesses an admirable bibliography.

PLANT BIOLOGY.

By H. GODWIN, M.A., Ph.D. London: Cambridge University Press. 1930. Pp. 265. With 67 figures. 8*s*. 6*d*.

THE loyalty of Cambridge students of elementary botany to Prof. A. G. Tansley's book must be rather seriously strained by the publication of this excellent introduction to the study of plants by another Cambridge teacher. It is written from the physiological rather than the anatomical point of view by one who is a physico-chemist rather than a biologist, and it gives a clear and interesting account of what plants are and how they live. Where the author goes wrong is in deliberately trying to adapt his book to the use of medical students and using as illustrations examples which he supposes are of particular moment in medicine. This leads him into fields with which he is obviously not familiar and his account of pathogenic bacteria is misleading in many particulars. Fermentation reactions are described as the "only" means of separating colon and typhoid bacilli; spores are characterised by "taking stains easily"; the chief "significance" of bacteria to man is their power to cause disease, though of course the author knows quite well that human life would be impossible if bacteria did not run the nitrogen cycle; bacteria are said to cause their ill-effects "sometimes by the direct breakdown of the body tissue as food material." If the student remembers any of this, it will have to be undone by his bacteriological teacher, and Dr. Godwin gives yet another example of the futility of trying to make the medical curriculum overlap upwards. By so much as chemists try to teach physiology or physiologists purport to teach pathology or pathologists pretend to teach clinical medicine, they are discharging their proper function badly and their teaching will be bad. Overlapping must be downwards, not upwards.

DR. AND MRS. JOSEPH COATS.

Compiled by their Daughters. Glasgow: Jackson Wylie and Co. 1929. With 13 plates. Pp. 330. 5*s*.

Joseph Coats (1846–1899) was the first professor of pathology in the University of Glasgow, and he wrote one of the earliest English text-books of pathology. He was also a good man and had a good wife, who survived him for 28 years. Their daughters have put together a book of remembrance which makes a delightful tale of happy, useful, friendly lives. It will be, of course, particularly interesting to their own circle, which was a large one; there is perhaps not quite so much about Coats the pathologist as we should wish. But how a throat specialist who had visited Recklinghausen taught his university that there was a new discipline which they would have to recognise is a significant piece of the history of the medical sciences. Everyone knows how fruitful Coats's work has been in Glasgow; and this book reminds us how young pathology is.

THE LANCET.

LONDON: SATURDAY, MARCH 29, 1930.

THE OPHTHALMOLOGICAL SOCIETY:

FIFTIETH ANNIVERSARY CONGRESS.

THE Ophthalmological Society of the United Kingdom celebrates at its Congress next week the fiftieth year of its existence. It owed its origin to a small but distinguished band of ophthalmic surgeons who were in the habit of meeting, rather casually and from time to time, at Moorfields. A more formal meeting at the house of Mr. Bowman (later Sir William Bowman), in February, 1880, resulted in the definite formation of the Society whose first meeting took place on June 23rd, 1880, under the presidency of Mr. Bowman. One of the members of the inaugurating committee is still with us in the person of Sir Thomas Barlow, who has kindly undertaken to respond to the toast of the Society at the Jubilee Banquet, which takes place on Friday, April 4th, in the Fishmongers Hall. Among the members of the first Council of the Society, in addition to the President and Sir Thomas Barlow, were many who had already, or who subsequently achieved distinction in the world of medicine. George Critchett, Jonathan Hutchinson, Hughlings Jackson, and Swanzy were Vice-Presidents; Edward Nettleship and Stephen Mackenzie were the Secretaries; and Gowers, Brudenell Carter, Hulke, Henry Power, and Waren Tay were some of the members of the Council. Of the 114 original members of the Society, 11 still survive, but distance and in some unfortunate instances the physical disabilities of age will prevent the majority of these from attending the meetings next week, but Sir George Berry and Mr. J. B. Lawford have both promised to come and, with Sir Thomas Barlow, will represent the founders. A number of distinguished foreign ophthalmic surgeons will also be present as guests of the Society, among them being Prof. van der Hoeve, President of last year's International Congress at Amsterdam, Prof. Marquez, President-elect of the next International Congress to be held in Spain in 1933, Dr. de Schweinitz and Dr. Morax, both aforetime Bowman Lecturers, Prof. Lundsgaard, Chairman of the International Council of Ophthalmologists, and Prof. Terrien, of the Hôtel Dieu, Paris. A programme of the Annual Congress, to be held next week, will be found on p. 729.

The 49 published volumes of the Transactions are ample evidence of how fully the Society has borne out its original aspirations. In the first volume appears Waren Tay's description of the disease now known as amaurotic family idiocy. Later volumes showed the first cases of the allied form, the Batten type of cerebro-macular degeneration. In the first volume, also, is the most admirable account of optic neuritis in cerebral lesions by Hughlings Jackson, which can be read with profit at the present time. This subject continues to bulk largely in the early volumes. In Vol. III. appears Lawford and W. Edmunds's paper on the pathology of optic neuritis, while further papers on the same subject in Vols. IV. and V. show how thoroughly the new group of workers were justified in the formation of a group of intensive workers. Indeed, to go through these transactions volume by volume, picking out papers of importance which have contributed to the advance of special knowledge, would amount to a syllabus for an exhaustive system of ophthalmology. The Bowman Lectureship was instituted in 1885 to commemorate the first President and the first lecturer was Dr. Hughlings Jackson. Many men of great distinction, British and foreign, have given this lecture, and this year, Sir Arthur Keith, President of the British Association, will discharge the office appropriately, speaking on "The Genius of Sir William Bowman."

The obvious value of the new Society was recognised almost at once, as the columns of THE LANCET show, and its activities found expression at a time when the level of ophthalmological knowledge expected from the young practitioner demanded an elevation which it was not receiving. It became felt almost immediately that the Society would be of great assistance in bringing about needed reforms and thus it assumed in its earliest days its great position. In 1912 the question arose of fusion with the Royal Society of Medicine, and for a time the future of the Society was in doubt. The arguments for the amalgamation were strong, if only because of the close and perpetual inter-relation between ophthalmology and the whole of medical science; and some such view as this did find expression among certain professional leaders at the time of the formation of the Society. But when the Royal Society of Medicine was founded it was felt that the tradition of good work so well and truly laid should not be lost, while it might be submerged if the Society lost its identity in the greater Society. The decision taken then has proved a wise one. The Society made itself responsible for running an Annual Congress and agreed to leave the monthly meetings to the Section. That arrangement has resulted in building up a strong Section of Ophthalmology in the Royal Society of Medicine; and the Ophthalmological Society, despite the fact that it has budded out into numerous off-shoots, is itself now stronger than ever, and works in complete harmony with the Section. If we may judge from the quality of the work that is being done at present by some of the younger members of the Society, it will maintain its place well in the forefront of the ophthalmological world and produce in the next 50 years work in every way worthy to stand beside the work of the last 50 years.

MENTAL TREATMENT BILL AND THE BOARD OF CONTROL.

THE progress of the Mental Treatment Bill in Committee has been disappointingly slow, nevertheless the main principles of the Bill seem secure and, unless there be unforeseen delay, it may be expected this valuable alteration in the law will be passed without serious amendment. The chief provisions—the admission of voluntary patients in public mental hospitals, the provision of temporary treatment for persons not objecting to it, and the obligation placed on local authorities to provide treatment for early or incipient cases of mental illness—have already been passed. Whilst there is certainly ground for criticism regarding details, we have no doubt that the measure will provide treatment for a large number of persons now drifting

towards insanity without any care or treatment, and that many of these will recover without certification and without any Justice's Order being required. In the future we may expect that recent cases will either be treated as voluntary patients or under the new clause providing temporary treatment, and it is satisfactory that this treatment will be available for the poor as well as the rich. We presume that only in the case of those refusing treatment will the present procedure be necessary. For unrecovered cases, still needing care, certification will be continued. The new feature of the temporary treatment clause lies in the fact that persons unable to decide for themselves can be received in a hospital, nursing home, or private house on the recommendation of two medical men, one of whom must be approved by the Board of Control. The place of treatment must in like manner be approved by the Board. It remains to be seen how this will affect medical practice, and whether the same unwillingness to recommend will obtain as that which exists in regard to certification. A new amendment was passed last week which required the medical man to give his reasons for his recommendation, and this brings the procedure very close to certification, and, moreover, greatly adds to the difficulty of the practitioner should at some future time his action be called in question. How far Clause 16 will effectively protect him from vexatious ligitation is not clear.

It was decided in Committee to discontinue the appointment of honorary commissioners, but it was agreed to consider the appointment in some other places of unpaid assistance. One reason for this was the desire to reduce the number of senior commissioners who will in future constitute the Board of Control. Perhaps some who voted against continuing the present system objected on principle to unpaid public servants. We think this decision unfortunate. When one considers the large amount of devoted work done by unpaid commissioners in the past, it seems a mistake not to take advantage of their service. Especially in respect to mental deficiency administration have honorary commissioners done an immense amount of work. These appointments make it possible to secure the services of retired commissioners and other experienced public men who cannot accept the obligations of a salaried post. We consider they add to the status of the Board and give public confidence in its decisions. The other matter which is of grave importance is the constitution of the Board itself. It has been decided that it shall consist of five senior commissioners, of whom one must be and two may be medical men. For many years the Board of Control has not been able to cope satisfactorily with all the duties laid upon it by statute. Its numbers have not increased proportionately to the increase of patients and all the extra work involved in administering the Mental Deficiency Act. Now it is to be given additional work. Under the Bill, the Board of Control will have to approve hospitals and homes for patients admitted voluntarily or, under the temporary treatment clause, must approve the doctors giving recommendations. Moreover, notifications, recommendations, and reports will bring to the office an additional torrent of papers that will require expert examination, and, besides all this, temporary patients will have to be visited, and the working of the new provision directed and supervised. Whilst it may be probable that many of the duties of the Board can best be performed by a small body which can meet frequently, we cannot but fear that the grading of the commissioners into two classes may have a prejudicial effect on what is really the most important part of their work. We believe it is necessary that the Visiting Commissioners should be men and women of standing so that their recommendations may carry weight with local authorities. Their position is essentially different from that of inspectors, in that they are appointed by the Crown to safeguard the liberty of individuals, to protect insane persons from neglect or cruelty, and to prevent suffering through the parsimony of local authorities. The KING is the protector of all who are not of sound mind, and he appoints the commissioners to act for him in this respect.

At first it may be thought that mental disease is only a department of medicine, and that mental hospitals should be under the direct supervision of the Minister of Health in the same way as poor-law hospitals and infirmaries. But the Royal Commission unanimously reported that the Board of Control should retain its independence, except that the majority of its members should be appointed by the Minister of Health, and he should represent it in Parliament. The present Bill does not actually alter this, but in the course of the debate several remarks were made which gave the impression that it was really desired that the Board of Control should in effect become a department of the Ministry of Health. We realise that in 1845, when the then Lunacy Commission was instituted, there was no Ministry of Health, and it is extremely unlikely that, in modern conditions, the old abuses will recur. It is, however, certain that to some extent evasion of the law will continue, and that "back parlour" treatment for private profit will occasionally occur. It is also certain that some local authorities will be slow to realise their responsibilities towards the insane and defectives, and unless the Board of Control and the Visiting Commissioners be such as command confidence there will be danger that neglect and even abuses may arise. Therefore we would urge that, whatever may be done, the Visiting Commissioners, medical as well as legal, should be persons of a standing that can command respect from local authorities and the highly trained medical officers in control of the mental hospitals. We would deplore any step which may weaken the authority of these public servants. Their status and conditions of appointment must be such as will attract men and women with professional attainments of a high order.

MEDICAL PATENTS.

REFORM of British patent law has been in the minds of many groups of people during the past few years, and while, no doubt, it is the manufacturers of dyestuffs and chemicals who most desire to see some change, it is significant that a representative committee of chemists should devote one-third of a long memorandum to the question of medical patents. This memorandum is summarised on p. 718, in so far as therapeutic and biological substances are concerned. The medical profession has itself from time to time expressed strong views on this subject, its attitude, as the chemists' memorandum points out, being mainly against the patenting of therapeutic substances. The objection rests in principle on two grounds. First, that it is undesirable for a medical man to derive financial benefit from any discovery made for the relief of human suffering; secondly, that to patent any such discovery might lead him to take unfair advantage of colleagues. The manufac-

turer's point of view is different, but it requires close attention, inasmuch as medical discoveries of a therapeutic nature are useless without active and sincere commercial coöperation. The manufacturer is in favour of restriction because it enables him to put on the market substances requiring great expenditure on plant, time, and personnel. While the medical inventor may be able to sweep aside any thought of financial gain from his discovery, it is absurd to expect the manufacturer to make the substance invented unless he can look to a reasonable profit from his enterprise. It would seem at first sight as though the main problem facing the Board of Trade's Patents Committee is to reconcile these opposing forces—the financially disinterested medical inventor on the one hand, and the profit-making manufacturer on the other. Each of them is called upon if the British public is to obtain the full benefit of scientific work. Unless there is some liaison between them, it is quite feasible for a foreign manufacturer to investigate an unpatented process described by one of these disinterested English workers, and by discovering a minor modification in the final stages to obtain a patent which would exclude the British manufacturer from starting to make the substance in question, or from going on if he had already begun. This has occurred many times. Whilst the position of the manufacturer is clear enough, the public may not find it so easy to understand the attitude of the medical inventor. The bodies which have had the matter under consideration, whether it be the Medical Research Council, the Ethical Committee of the British Medical Association, the British Science Guild, or the Association of the British Chemical Manufacturers, all assume that the medical man does not desire to make money from his invention. This attitude may reflect that of the medical profession without being exactly logical. It does not necessarily follow that the medical man who patents a discovery would be biased in his treatment of patients nor, perhaps, is that so much the apprehension as that he should swell his clientèle by the attraction of novelty. The type of medical man who discovers a therapeutic substance, capable of manufacture on a large scale and of sufficient importance to be protected from foreign competition, is unlikely to be engaged in medical practice. In ninety-nine cases out of a hundred he will be a worker in one of the scientific departments of a university or hospital, and the very nature of his discovery would demand that he should devote his whole time to the research in question. It is highly improbable that a physician, surgeon, or general practitioner would make a discovery of this type. The strictly professional attitude —at any rate hitherto—may be seen, therefore, to guard against what is in theory a great danger, while it may have no existence in practice. Nor can a medical man who makes money out of a scientific discovery be reproached for turning human suffering to financial gain, for in every branch of medical practice it is success in relief of suffering that brings position and emolument.

The middle way, now unanimously accepted by all the committees, is what is termed the system of dedicated patents. The medical man who discovers the preparation of a valuable therapeutic agent will patent the substance itself, and its method of manufacture, through an authority to be called the Public Patents Trustee. The patent will be dedicated to the British public, the patentee himself deriving no financial benefit from his discovery. The Trustee will issue licences for the manufacture of the substance to commercial firms, who will sell it to the public. The first free licence, it seems, will be granted to the patentee or to his nominee, but it is not quite clear whether or no this gives the patentee the opportunity of making a little money through his nominee. That the medical patentee will be entitled to have some say in the foreign rights follows from the provision: "the inventor will have the first option of taking out foreign patents, and if he exercises this he can deal with foreign royalties in the usual way." On the manufacturer's side, the Trustee will decide to whom the licence should be given, and in this delicate duty he is to be assisted by an advisory committee. It is the intention of the Joint Chemical Committee that royalties imposed by the Trustee should be of a nominal character, and should not more than suffice to cover the expenses of administering the dedicated patent. In other words, the medical inventor who dedicates his patent to the British public, after having worked early and late to obtain this valuable information, forswears all financial gain—with the possible exception of some slight advantage through the free licence and foreign rights. The medical inventor, or the hospital or university which has financed him, has borne the whole expense of his investigation, and the British public accepts the benefit. The manufacturers are given the right to make the substance, and the royalties imposed by the Trustee are to be "nominal." On the other hand, if a non-medical person were to come to the manufacturer with a patented process, he would not demand royalties of a purely nominal character. He would say that he had a very valuable preparation, that he had expended his brain, time, and money on producing the discovery for a patent, and that the manufacturers must be prepared to pay him royalties. If they decided that it was a good preparation, and one likely to bring in money, they would come to terms. When they deal with a medical man, they are prepared to take full advantage of the fact that he wants no royalties. The proposals as they stand savour of the heads-I-win-tails-you-lose type.

It is unfortunate that all the discussions on patent reform in connexion with medicine should turn on the financial question. The doctor must not make money, the manufacturer must be guaranteed his. Surely there is a wider principle than this at stake; that the public be supplied with really active preparations. It matters little who is obtaining a dividend of 5, 10, or 15 per cent. on the sales of (let us say) an endocrine preparation. The essential point is the potency of the preparation. Why should we not insist that any substance made under a dedicated patent should automatically be placed under the Therapeutic Substances Act, and that any firm operating under a dedicated patent should be bound to submit their products to the authority constituted under this Act? By this means doctor and public alike would be certain that the firm in question were producing an active substance in accordance with the principles laid down in the original publication. Again, should not all these committees recognise that, if the medical man is prepared to forego his financial right, the price of the final article as sold by the manufacturers should be controlled by the Trustee, more particularly so when they recommend that the royalty should be "nominal." While the patenting of dyes and heavy chemicals may be a purely financial problem, the manufacturers should realise that in medical matters the first and final consideration is the health and welfare of the general public. If the patent reform proposed is to ensure that substances manufactured under the scheme will be inspected and guaranteed accurate in accordance

with the original specification, then it is a laudable scheme. If on the other hand it is merely concerned with the financial aspect of the situation, then the body of medical opinion must look upon it with grave doubt.

Annotations.

"Ne quid nimis."

PROBLEMS OF A CITY HOSPITAL.

CAREFUL students of hospital reports and statistics cannot avoid the conclusion that the outstanding difficulty of the voluntary hospitals is no longer the finance of the year, but accommodation. Though there are still deficits, they are smaller and less numerous, generally speaking, than a few years ago; but as this anxiety has lessened it has been replaced by the problems, often acute, of finding beds for waiting patients. The rather rapid growth of the "hospital habit" is not the only cause of the congestion, and the relation between cause and effect is neatly exemplified in the report for 1929 of the Royal Victoria Infirmary, Newcastle-on-Tyne, which may be taken as a typical, as it is certainly a model, city general hospital. The beds at its disposal —572—are obviously inadequate for an agglomeration of population such as that of which Newcastle is the centre, and it is not surprising that 22 extra beds have to be provided every day, a number sometimes considerably exceeded. In every great industrial centre there are many accidents, and last year Newcastle Infirmary treated over 22,000 such cases. That, of course, means pressure upon the out-patients department, rather than upon beds, but 1470 of these cases were the direct result of accidents with motor vehicles, and 436 of these patients —roughly, one third—had to be detained. The net result was the occupation of 20 beds each day throughout the year, which almost exactly accounts for the extra beds. Yet, revision of the list notwithstanding, there were 2603 patients waiting for these beds. The annual cost of each was £160 8*s*. 8*d*.

Overcrowding is one of the worst and most intractable troubles with which the hospital administrator has to deal. It impedes work which very often cannot endure impediment without evil results, and adds to the wear and tear of nerves and tempers which need to be exceptionally calm and serene. Yet it is not at Newcastle alone that these trying conditions exist; they are general throughout the country, and only experience will show to what extent the pressure will be relieved by that throwing open of the poor-law hospitals which takes effect next week. The relief is mathematically conditioned by the average number of vacant beds in these institutions. In some there are many; in others very few, but the adoption of the county or the county borough as the unit should facilitate the mobilisation of hospital resources. It is to be feared that, in face of the growing pressure, this source of help will not fill the gap for any substantial period, and at Newcastle, as in other great towns, this is clearly recognised both by the infirmary and the corporation. The one is perfecting its arrangements for utilising the premises vacated by the Ministry of Pensions, part of which will provide 86 pay-beds; the other proposes to set aside a portion of the Wingrove poor-law hospital to supplement the infirmary accommodation. Yet, undismayed by the existing pressure, Newcastle Infirmary is about to establish a complete orthopædic department as a separate unit of 50 beds, with its own out-patient annexe, and in view of the attention now being paid to orthopædics, and the comparative scarcity of machinery for dealing with it, there are not likely to be many empty beds in the new unit.

Enterprises such as this involve heavily increased expenditure, and it is beginning to be generally realised that the most certain and fruitful method of meeting enhanced current expenses is by the establishment of contributory schemes. The desirability of setting up such a scheme at Newcastle Infirmary has been discussed, but the Parliamentary Committee of the Newcastle Corporation has gone further and actually made the proposal. It seems no longer to be possible to confine any contributory scheme which, like the exceedingly remarkable Birmingham one, is pooled for all the hospitals of an area, merely to the voluntary hospitals. In a completely coördinated plan the municipal institutions must assuredly share in the advantages of a system which confers rights while saving self-respect.

FURTHER PROVISIONAL DEATH-RATES FOR 1929.

PROVISIONAL death-rates per million population for England and Wales during the year 1929 have been reported by the Registrar-General as follows:—

	Males.	Females.	Persons.
Respiratory tuberculosis ..	938	661	793
Other tuberculosis	185	148	166
Cancer	1386	1483	1437

The maternity mortality in 1929 per 1000 live births based on deaths primarily classed to puerperal conditions is given provisionally as follows:—

Puerperal sepsis	1·80
Other accidents and diseases of pregnancy and parturition	2·53

POLYCYTHÆMIA.

Dr. F. Parkes Weber and Dr. O. B. Bode [1] have done good service in systematising the conditions characterised by increase in the number of the red cells in the blood. They classify the polycythæmic states under the headings of erythrocytosis or secondary polycythæmia, erythræmia, hypertonic polycythæmia, and erythroleukæmia. In the first class fall all those cases of increase in the red cells following a response of the hæmopoietic system to a call for more tissue-oxygen. The physiological response is seen in the polycythæmia of high altitudes, but the same mechanism accounts for polycythæmia in certain pathological conditions such as stenosis of the pulmonary arteries, syphilitic pulmonary arteriosclerosis, and heart failure. Even in certain types of case which the authors class as "toxic"—notably the polycythæmia seen in chronic carbon monoxide poisoning, and in methæmoglobinæmia due to poisoning by the coal-tar derivatives—the same mechanism is probably at work. All cases of this type they would group under the name of erythrocytosis. Their treatment must naturally be directed towards the underlying causes.

Cases belonging to the Osler-Vaquez syndrome, which come under the heading of erythræmia, are distinguished from the foregoing by the presence, besides polycythæmia, of a grossly enlarged spleen, and the absence of any discoverable cause for the increase in the red cell count. They think this condition a primary disorder of the hæmopoietic system, comparable in every way to the leukæmias. That it is not confined to the erythrocyte-forming cells of the system is shown by the fact that the white cells, especially the polymorphs, are always increased in number, and that myelocytes and other abnormal forms of white cell may be present. If the leukæmias are to be regarded as representing a change in the blood comparable to malignant change in the fixed tissues—and there is much to support this view—erythræmia may be looked on as a malignant change mainly affecting the erythrocyte-producing portion of the hæmopoietic system. Evidence of the close relationship of erythræmia to leukæmia is afforded by those cases which start with the blood picture of erythræmia and finish with that of myeloid leukæmia with pronounced anæmia. These cases Parkes Weber

[1] Polycythæmia, Erythrocytosis and Erythræmia. By F. Parkes Weber and O. B. Bode. London: H. K. Lewis and Co., Ltd. 1929. Pp. 34. 3*s*.

and Bode would group under the separate heading of erythroleukæmia, but there seems little necessity for this further group. All cases of erythræmia may be regarded as potentially leukæmic. Frequent and copious bleeding and phenylhydrazine are regarded as the best means of treatment, and a special warning is given against splenectomy.

It is doubtful if the third group of Parkes Weber and Bode—polycythæmia hypertonica—needs to be differentiated from the first. Polycythæmia associated with high blood pressure was first described as an entity by Gaisböck, and on the continent rejoices in an eponym. High blood pressure is found in many cases of polycythæmia, both secondary and essential, and renal disturbances are not uncommon. All cases of polycythæmia might perhaps be brought together under the first and second of the authors' groups.

ANALYSIS OF PSYCHOTICS.

THE discussion at the Royal Society of Medicine on psychotherapy in mental disorder, which we reported last week (p. 625), revealed a divergence of view which may be explained in part by differences in scientific method and in part by differences of training and experience. On the one hand are psychiatrists whose work has been concerned principally with institutional material; on the other hand are psycho-analysts who for the most part have not had much to do with the type of psychotic found in mental hospitals and whose training in psycho-pathology has been predominantly on Freudian lines. Dr. Devine from a wide experience of confirmed psychoses again advocated the view, so ably expounded in a recent book, that the basic cause of psychotic manifestations is primarily "organic." He uses the term "organic" in a special sense as pertaining to the vegetative aspects of the organism, not necessarily the same as the usual clinical sense of "structural." With such a point of departure it is clear that the modifications which psychotherapy tends to produce—primarily at the psychological level of the integrated activities of the organism—cannot be considered as cardinal but must be regarded as symptomatic palliatives. Psycho-analysts, however, feel capable of explaining all the characteristic psychotic symptoms in psychological terms alone, deduced from psycho-analytical interpretation of the mental processes involved. The fact that these interpretations have not received by any means a universal acceptance, and that even those psychiatrists who are sympathetic towards much that is psycho-analytic are still sceptical of some of the most fundamental of the assumptions involved, naturally does not deter psycho-analysts from pursuing their working hypotheses. Dr. Glover refrained from doing much more than defining the ways in which by the special psycho-analytic methods of approach psychotics may become accessible to psychotherapy. He explained that the cases so far dealt with were too few and the time that has elapsed too short to justify final claims. We might add that a perusal of Abraham's pioneer psycho-analytic work on some depressive psychoses, mentioned by Dr. Sylvia Payne in her contribution, does not compel conviction of the validity of his interpretations.

But there is a viewpoint which in the discussion between organicists and psycho-analysts hardly received sufficient attention, although it is widely held among continental psychiatrists. For example, a distinction has long been made between the "fundamental disease process" and the "accessory symptoms" of schizophrenia. The fundamental process would correspond to Devine's organic substratum, while the accessory symptoms are presumably accessible to psychotherapy. Similar interpretations would make psychoses of manic-depressive type and also many cases of idiopathic epilepsy explicable on the basis of peculiar, sometimes inherited, responses to psychological factors. Here also psychotherapy should have a fruitful application in the resolution of the precipitating conflict. Another view regards schizophrenia, paranoia, and paranoid conditions as frequently the result of habit-deterioration, the psychotic development being traceable in the life-history, where traits of personality emerge of a type that leads to increasing maladjustment and finally to the rupture of compensation that we call the psychosis. Looked at in this way the therapeutic problem of the psychoses, as Dr. Gillespie pointed out, seems more hopeful, principally from the preventive aspect. This would involve working with children and adolescents in the pre-psychotic stages. Some confirmation is forthcoming both from recent psychiatric experience with children and also, it is interesting to find, from some instances of the psycho-analysis of children such as those quoted by Dr. Melanie Klein.

What the discussion principally brought out is the need for much closer rapport between the different investigators, psychiatrists and psycho-analysts. It is unfortunate that there should be such a division of opinion as springs from imperfect collaboration. It is clear also that there is much room for research into the predisposition to psychosis and into the possibilities of modifying the various factors while they are in the making. It would be most useful if a number of people, apparent candidates for psychopathy, could be followed and studied from childhood into adult life. Furthermore, an attempt should be made to disentangle the congenital or inherited and presumably less modifiable predispositions from those which are acquired and presumably more modifiable. Our county asylums, drawing upon a defined area of population, should be peculiarly well situated for the study not only of mental disease in families but of the inheritance of individual traits and tendencies. In the psycho-pathology of the developed psychoses themselves there remains a wide field for study. The relative dearth of articles on this topic published from mental hospitals in this country is in striking contrast with the number of researches on the physico-chemical condition of mentally sick patients. The problem of accessibility has not been sufficiently studied; a continuous search should be made for a technique of access. When these questions have been better explored it will become possible to discuss treatment, psychotherapeutic and otherwise, more effectively.

PULMONARY ASBESTOSIS.

IT is now recognised that the inhalation of dust generated in the manufacture of asbestos often gives rise to an insidious and progressive pulmonary fibrosis which is distressing in its effects and disastrous in its consequences. The value of asbestos depends upon its well-known resistance to heat and to the action of strong acids and alkalis. Its importance in the manufacture of fire-resisting articles, whether designed to protect against risk or for use in connexion with machinery, and the absence of any efficient substitute is the cause of ever-increasing demands upon the factories where the fibre-containing rock is crushed and the fibres spun and carded. The number of persons employed in the factories is already large and, as Sir Thomas Oliver[1] points out, many of the workers are young. In the past too little attention has been paid to their welfare, and the need for rigid standards of protection is urgent if further suffering and loss of life are to be prevented. The effects of the inhalation of asbestos are due to the silica which it contains, but the resulting fibrosis differs histologically from the nodular form seen in other types of silicotic lung—e.g., in gold miners' phthisis. The whorled formations seen in the latter are absent and are replaced by a diffuse fine interstitial pneumonia. The difference is also reflected in radiograms of the two conditions, the gold miner's lung showing scattered dense rounded opacities which contrast with the fine basal mottling and linear striæ which are characteristic of the asbestos worker's lung.

[1] Oliver, T., Arch. f. Gewerbepath. und Gewerbehyg., 1929, i., Heft 2.

A peculiar feature of pulmonary asbestosis is the presence of the so-called asbestosis bodies. These were discovered by Prof. Matthew Stewart in the sputum of workers suffering from the disease, and they have been demonstrated by a number of investigators in sections from the lungs, and in lung juice removed during life by exploratory puncture or expressed at autopsy. The asbestosis body, which bears a curious resemblance to a minute crustacean, consists of a central core of asbestos fibre which appears to be embedded in a series of discs. One end of the fibre is often buried in a bulbous extremity, and this with the succeeding discs produces the appearance of a minute screw. The nature of the aggregation around the central spicule is unknown, but Gloyne[2] has been able to demonstrate the central fibre by exposing the containing body to the action of sulphuric acid.

THE SCIENTIFIC EXAMINATION OF PICTURES.

THE famous Italian pictures, which returned to their various homes last week, after being on crowded view in Burlington House for the past two months, evoked enormous general enthusiasm and, as was inevitable, certain discussions on the attributions. For more than ever is the authenticity of old masters becoming a serious financial matter, while the prices for genuine canvasses soar upwards under American desire of possession. It is significant of much that is happening in clinical medicine that recourse should be had to exact scientific methods in diagnosing the period of a painting and possibly the actual painter—critical acumen is taking its place with *tactus eruditus* as something personal whose value can be added to by employing the methods of laboratory technique. Dr. A. P. Laurie, professor of chemistry to the Royal Academy of Arts, has contributed to this month's issue of *The Analyst* an article—a record of a recent lecture delivered before his Society—upon the identification of pigments used in painting at different periods, in the course of which he gives a brief account of other methods of examining pictures. The technique employed closely resembles that of the pathological laboratory, and it is not suggested that the verdicts of these investigations are to take the place of the judgments of the instructed. Knowledge of the art of painting, its history, and the manners of the various schools, of brushwork, and of idiosyncrasies of well-known executants will remain the medium of identification, but the chemist and the radiologist can be drawn upon for assistance. Dr. A. Martin de Wild (see THE LANCET, Nov. 2nd, 1929, p. 932) has gone over the ground, when investigating the pigments used by the Dutch and Flemish masters from the fifteenth century onwards, and such a system of inquiry may give art critics a feeling, shared by many medical practitioners, that, with a disputed diagnosis as a possibility, the calling in of the chemist and radiologist is a measure of ordinary prudence.

PYELOGRAPHY WITHOUT CATHETERISATION.

GOOD results are claimed[3] for a new method of examining the urinary tract by means of a preparation called uroselectan. Since the advent of cholecystography urologists have been stimulated to search for a similar method applicable to their specialty. After trying various substances Lichtenberg and Zwick have hit upon an iodide compound which they call uroselectan, and it promises to be very useful for the purpose. As it is badly tolerated by the stomach it has been given by intravenous injection. Two injections are made at three minutes' interval, the first 40 c.cm. and the second 60 c.cm. of a 40 per cent. solution of the drug. Films may be taken a quarter, three-quarters, and one and a quarter hours after the final injection, and it is said that as a rule good shadows are obtained of the whole urinary tract. If, however, the renal function is depressed no shadow may appear for six hours or more, and the rapidity with which a pyelogram is obtained is therefore a rough guide to the efficiency of the kidney The method may be regarded as a definite advance in urology. Where it is sufficient for diagnostic purposes it is obviously a great gain to the patient who is spared ureteral catheterisation, and it should also be useful in those cases in which the catheterisation is attended by special difficulties, as in advanced tuberculosis of the bladder. Uroselectan has already been tried by a number of surgeons in Germany and France, and is being tested in England. Mr. Frank Kidd records some observations in the current number of the *Journal of Urology*.

[2] Wood, W. Burton, and Gloyne, S. Roodhouse: THE LANCET, March 1st, p. 445.

[3] Valley-Radot, P., Dalsace, J., Nemours-Auguste, and Dérot, M.: Presse Méd., March 19th, p. 385.

A FRIPP MEMORIAL.

A PROPOSAL has been made in the public press that a memorial to the late Sir Alfred Fripp should be instituted to perpetuate his memory, and we have received from the popular novelist, Major Hay Beith, an outline of the scheme which has been set in hand. It is proposed to invite public subscriptions to a fund to be devoted to the development and extension of the Children's Department of Guy's Hospital, the endowing of cots, the building of a new ward, or in such other manner as the governors of the hospital and Sir Alfred's own relatives may decide. The trustees of the fund will be Lord Lonsdale, Mr. Wilfred Godfrey, and Major Hay Beith. Subscriptions may be sent to, and will be gratefully acknowledged by the Hon. Secretary, the "Sir Alfred Fripp" Memorial Fund, 145, Cheapside, London, E.C.2. Major Beith writes: "Two characteristic donations have already been received by us—a cheque for £1000 from those truly practical philanthropists, the Froth Blowers, and a sum of 10*s*. raised by farthings among the children of a a County Council school in one of the poorest districts of London." The total sum subscribed will be handed intact to the Governors of Guy's Hospital, an institution, as our readers know, with which Sir Alfred was closely associated as a student, surgeon, and governor for over 40 years.

VITAMIN DEFICIENCY AND ANÆMIA OF PREGNANCY IN INDIA.

AN anæmia of pregnancy is common in India among all communities except the European. The blood picture closely resembles that of pernicious anæmia, and treatment with liver extract is often successful. If untreated the disease is frequently fatal or there may be recovery after delivery. The anæmia is differentiated from true pernicious anæmia by this occurrence of spontaneous recovery and by the rarity of achlorhydria, regarded as an invariable concomitant of true pernicious anæmia. The condition has received a good deal of attention without any light being thrown upon its ætiology so far. A new study, however, has been made by L. Wills and M. M. Mehta, working under the auspices of the Indian Research Fund Association for the Maternal Mortality Inquiry, and they offer some interesting suggestions in the course of a preliminary report.[1] Their first important contribution is the recognition that the disease is not essentially an anæmia of pregnancy, but widely affects women throughout the population. It is only exacerbated by the exigency of pregnancy. Hearsay evidence is quoted that it is even common also among men. The wide prevalence of the condition and the equally wide prevalence of poor nourishment, deficient both in quantity and quality, readily suggest the likelihood that an association between the two is of fundamental importance in ætiology. The report is only a preliminary one, chiefly occupied with the accurate defini-

[1] Wills, L., and Mehta, M. M.: Ind. Jour. Med. Res., 1930, xvii., 777.

tion of the clinical entity; the dietary evidence is, therefore, not given, but the low content in both vitamins A and C of the majority of the diets is pointed out and is deemed to be significant. Apparently, none of the classical symptoms of vitamin A deficiency or of scurvy is observed, and the deficiencies, therefore, must belong to the latent type, whose importance is being only slowly recognised, probably because prevention or cure by the specific vitamin affords the only means of clinching the diagnosis.

ELEMENTARY KNOWLEDGE OF MALARIA.

THE main facts about malaria can hardly be too generally known among laymen, and a second edition of a pamphlet taken from Sir Ronald Ross's book on the "Prevention of Malaria" is accordingly welcome.[1] It is simply and clearly written and deals first with the parasites, the fever, and the way in which its varying periodicity is produced, and the main complications to which it may give rise. In referring among these to miscarriage, it is stated that while malaria may cause this quinine will not. It does not, however, appear advisable to seem to suggest that a pregnant woman should take quinine, except under medical supervision, unless this is not available. The description given of the mosquito cycle and of the mode of infection of man will be readily understood by one without medical training, though another edition might make it clearer that human and bird malaria are different and are not both carried by anopheles. The general importance of the house as the ordinary place where infection is acquired is emphasised, and it is advised that there should be reluctance to occupy an infected house without fumigation. The means of effecting this are carefully described as well as other methods of personal protection from mosquito bites. The life-history of these insects in its bearing on the transmission of malaria is adequately sketched, as well as the data by which culex, aëdes, and anopheles can ordinarily be recognised in their different stages. The avoidance by the householder of the careless provision of anopheline breeding places receives due attention. Under public prevention, it is pointed out that malaria probably causes a quarter or more of the sickness in the tropics and that the cost of public works for its suppression is likely to be more than recouped by saving in life, labour, invaliding, medical attendance, and hospital accommodation; and that a campaign which effects this will remove mosquito-borne diseases other than malaria, and will improve general sanitation.

BLEEDING AND THIRST.

IT is the custom in most hospitals to press upon a donor from whom blood has been taken a large cup of tea; in a minority of institutions beer is offered as an option; in some plain water only is provided. Except when faintness comes on in the course of withdrawal of blood donors seldom complain of thirst, but it seems only reasonable to provide as soon as possible fluid to take the place of that lost. There is a widespread idea that hæmorrhage gives rise to thirst and that this feeling is a teleological phenomenon designed to induce the organism to make up for the lost fluid. Probably a good many donors thankfully accept the proffered fluid because they feel that after losing a pint or so of blood they ought to be thirsty. Working with animals on whom such considerations can have no effect two French investigators[2] have been unable to find evidence that extensive hæmorrhage gives rise to any particular feeling of thirst. The animals used were horses which in the course of routine work in the preparation of therapeutic sera were bled to the extent of six litres daily for a variable number of days. They were watered in the morning before and in the evening after the withdrawal of blood. On averaging the results of observation of the fluid intake of 72 horses it was found that whereas on the days on which they were bled the intake of water was about 25 litres, on the other days it fell below this figure to the extent of only about one litre and a half, and this in spite of the fact that six litres of blood had been withdrawn. There was, moreover, no tendency for any excessive intake of water in the evenings after the bleedings. In one horse which was bled on 11 days, the evening intake of water after the bleedings was consistently less than the morning intake. The thirst following upon hæmorrhage associated with severe traumatism has long been recognised as one of the major terrors of the battlefield, but it seems probable that this thirst is due rather to the fever following upon wound infection than to loss of blood. The reserves of water in the body are by no means confined to the blood, and it would appear that they are so well conserved that it is almost impossible to seriously deplete them by withdrawal of blood to any extent that the organism can stand. In the horses used in the investigation described above no measurement of the urinary excretion of water was made; had this been done it would probably have revealed a considerable diminution following on the bleedings.

[1] A Summary of Facts regarding Malaria. By Sir Ronald Ross and Sir Malcolm Watson. 1930. London: John Murray. Pp. 15. 6d.

[2] Le Soif après le Saignée, Brocq-Rousseu and G. Roussel, Le Sang, 1929, i., 44.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 15TH, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 433 (last week 393); scarlet fever, 2509; diphtheria, 1704; enteric fever, 46; pneumonia, 1730; puerperal fever, 51; puerperal pyrexia, 101; cerebro-spinal fever, 19; acute poliomyelitis, 6; acute polio-encephalitis, 1; encephalitis lethargica, 14; continued fever, 1; dysentery, 6; ophthalmia neonatorum, 127. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on March 18th–19th was as follows:—Small-pox, 587 under treatment, 26 under observation (last week 594 and 26 respectively); scarlet fever, 2132; diphtheria, 2712; enteric fever, 18; measles, 1043; whooping-cough, 81; puerperal fever, 32 (plus 4 babies); encephalitis lethargica, 123; poliomyelitis, 1; "other diseases," 28. At St. Margaret's Hospital there were 9 babies (plus 4 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns including London, there was 1 death from small-pox, 2 (0) from enteric fever, 165 (66) from measles, 14 (6) from scarlet fever, 35 (5) from whooping-cough, 43 (14) from diphtheria, 50 (11) from diarrhœa and enteritis under two years, and 85 (13) from influenza. The figures in parentheses are those for London itself.

The fatal case of small-pox was assigned to Shoreditch (Met. Boro.). Deaths from enteric fever outside London were reported from East Ham and Birmingham. Fatal cases of measles were concentrated at Manchester, 12; Sheffield, 10; West Ham and Portsmouth, each 8. (Glasgow also reported 23 deaths.) Whooping-cough claimed 3 victims each at Birmingham and Liverpool. Four deaths from diphtheria were reported at Liverpool, 3 each at Birmingham and Sheffield. The highest figures for deaths attributed to influenza were Portsmouth 5, Birmingham and Manchester each 4.

The number of stillbirths notified during the week was 295 (corresponding to a rate of 42 per 1000 births), including 60 in London.

LONDON HOMŒOPATHIC HOSPITAL.—Last year this hospital, which then completed 80 years' work, received 1712 in-patients; the out-patients' attendances exceeded 60,000. The Hospital Saving Association sent 401 in-patients and 2071 out-patients, for whom £3375 was paid.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation.

LXVI.—THE SIGNIFICANCE AND VALUE OF EXAMINATIONS OF MILK.

PART II.*

Pasteurised Milk.

A MOST important grade of milk is that defined as pasteurised. The term pasteurisation, in connexion with milk, has been used very loosely to apply to all methods of heating milk so long as the temperature does not reach boiling point. Quite commonly it has been applied without qualification to what is called "flash" pasteurisation, by which process milk is heated to a temperature from 160° to 175° F. for a few seconds. This treatment certainly destroys a large proportion of the bacteria in the milk, and therefore improves its keeping qualities, but the treatment does not destroy the most important infecting agent to be found in a certain proportion of the milk supplies—namely, the bacillus of tuberculosis. Besides, unless carried out with care, it somewhat damages the commercial quality of the milk by interfering with the cream-line and by imparting a cooked flavour if the temperature is allowed to get near to 180° F. By the Milk (Special Designations) Order pasteurised milk is specifically required to be retained in a temperature of not less than 145° and not more than 150° F. for at least half an hour, and be immediately cooled to a temperature of not more than 55° F. This method of pasteurisation has been alluded to as the "positive holder" method, because the milk is positively retained for a definite length of time, as distinct from the "flash" method alluded to. In speaking of pasteurised milk and its qualities, it is desirable to use the term in relation to the treatment of milk as thus specifically defined by the Order of the Ministry of Health. When milk is sold as pasteurised it must not contain more than 100,000 live bacteria per c.cm. It need not be bottled, but the vessel in which it is contained must bear a suitable label with the words "pasteurised milk." Although not sold as such, over 80 per cent. of the milk sold in the Metropolitan area of London is pasteurised. A large proportion of the milk sold in the large provincial towns is also similarly treated.

It has been shown conclusively that when milk has been pasteurised by the method as defined, there is an almost complete security against infection from the tubercle bacillus, in fact, the security is as great as, if not greater than, with Certified or Grade A (T.T.) milk. At the same time there is a protection from other pathogenic organisms which may gain access.

It has been contended that pasteurisation alters the character of the milk, but while this contention might be applied to milk treated by the "flash" method, it does not apply to the method defined by the Order. By the latter method the chemical changes are negligible, and the only vitamin that may be reduced is the antiscorbutic or C-vitamin. The amount of this vitamin in milk is very small, however, and its loss can be readily met by the administration of a small amount of orange juice to young children who may have to subsist almost entirely on pasteurised milk.

Grade A Pasteurised.—The only other grade of milk included in the Milk (Special Designations) Order is Grade A pasteurised, which is Grade A or Grade A (T.T.) milk which has been submitted to pasteurisation and which, after treatment, must not contain more than 30,000 bacteria per c.cm., and should have no coliform bacteria in 1/10 c.cm. This is a grade which is really not required. The chief quality of Grade A milk surely is dependent on its raw character, and after pasteurisation there is little to choose between Grade A pasteurised and pasteurised milk.

All these grades of milk, their production and sale, are kept under close supervision by the Ministry of Health and the local authorities named in the Order. There is, therefore, a real guarantee that they comply with the requirements set out. The medical officer of health can always be depended upon to give information to medical men regarding graded milk and regarding the particular quality of any milk supplied in his district.

Milk-borne Infection.

As is well known, many serious outbreaks of infectious disease, such as typhoid fever, diphtheria, and scarlet fever, and of sore-throat have been recorded as having been caused by milk. The recent occurrence of many cases of illness at Brighton is a striking example of milk infection. Their milk-borne character, however, is proved, not by the discovery in the milk of infective organisms, but by the incidence of the cases and by the special features of the outbreak. The evidence in the very few cases in which the bacteria of typhoid fever and diphtheria have been reported to have been found in milk is not conclusive. When one considers the numerous bacteria commonly found in milk and the small amount of infection that may gain admission, the difficulty of isolating the specific infecting agent can be imagined.

The search for pathogenic organisms in market milk is complicated by the fact that many types of organisms are encountered in making a bacteriological examination. Over 160 different organisms have been isolated from milk and identified by cultural and other characteristics. Even the members of the coliform group are numerous. Contrary to the popular view, milk drawn from the udder with aseptic precautions is not sterile, but contains a varying number of bacteria, being greatest in the fore-milk, in which there may be thousands, and smallest in the strippings, in which there may only be three or four per c.cm. The bacteria obtained from the inside of the normal udder are coccal in form. Where there is mastitis streptococci may appear in large numbers. To isolate the streptococcus of mastitis or Bang's bacillus of contagious abortion from milk directly drawn from the udder of an affected animal is a comparatively easy matter. In the course of ordinary milking operations many forms of bacteria are added from the air, from dirt or fæces falling from the outside of the udder, and from the milk vessels. It is from the particles of fæces and from the imperfectly sterilised milk vessels that the coliform bacilli are usually added. During transport from the cowshed to the consumer the milk receives varied additions of bacteria unless careful precautions are taken to exclude contamination by the use of sealed bottles or proper churns.

The recognition during recent years, in different countries, of cases of undulant fever associated with the consumption of milk has evoked much interest. Although Bang's bacillus has not been isolated from the incriminated market milk, there can be no doubt after weighing all the evidence in individual cases, regarding its bovine origin and its pathogenic influence in causing fever in the human subject.

Milk-borne Tuberculosis.

The most important milk-borne disease undoubtedly is tuberculosis, and therefore it deserves most consideration. It is difficult to state with any degree of accuracy what percentage of cases of tuberculosis is of bovine origin, but the following table, compiled by

* Part I. appeared last week.

Dr. A. S. Griffith, represents results obtained by him up to the end of 1927 :—

Cases of tuberculosis.	Children—				Persons 15 years and over.	
	under 5 years.		5–15 years.			
	H.	B.	H.	B.	H.	B.
1289	167	114	442	167	379	25

H. = human ; B. = bovine.

Bovine tuberculosis thus forms a much large proportion of the tuberculosis found in children unde 5 years of age than in those between 5–15 years, while in persons 15 years and over the percentage of the bovine type of infection is very small. These are significant figures, indicating as they do the greater prevalence of the bovine type of tubercle amongst those members of the community who consume most milk. Somewhat similar figures have been put forward by other observers. Taking all the evidence relating to bovine infection of the human subject, Dr. W. G. Savage, in his book, "The Prevention of Human Tuberculosis of Bovine Origin," states :—

"The position can be summed up by saying that, while the tubercle bacillus of bovine origin is probably not responsible for more than about 6 per cent. of the total tuberculosis mortality, yet this proportion is considerable, and its continuance is not creditable to our public health administration."

The percentage of milk supplies infected with tubercle bacilli varies greatly in different towns, but it may be accepted that the average is about 6·5 per cent. This figure relates to unselected samples of milk as delivered at the town and not treated by any heating or pasteurising process. The number of cows with tuberculosis of the udder used to be estimated by competent observers as about 2 per cent., but Savage, as a result of recent figures, has shown that the percentage with clinically detectable tuberculosis of the udder in unselected herds is about 0·2 to 0·3.

The detection of the tubercle bacillus in milk is not an easy matter. Methods have been suggested at various times by which the tubercle bacilli can be detected by microscopic examination. In these methods some form of concentration or centrifugalisation of the bacteria in the milk has predominated, followed by the making and staining of films made from the deposit. With the Ziehl-Neelsen stain the appearance of the tubercle bacillus is quite characteristic under the microscope. But these methods have proved untrustworthy, and the only process that can be depended upon is by the injection of the suspected milk into guinea-pigs. This is carried out by centrifugalising about 10 to 40 c.cm. of milk and then injecting the deposit subcutaneously into the inner side of the thigh of a guinea-pig. Three weeks must elapse before the guinea-pig is killed and examined for evidence of tuberculosis. The great drawback is that if the milk is infected, much damage can be done in the meantime to young persons ingesting it owing to the delay in completing the examination.

The health authorities of most large towns regularly take samples of milk to be tested by animal inoculation for the presence of tubercle bacilli. Infected supplies produced within the area of a county borough are investigated by the county borough council, and steps are taken to discover the offending animal and have it destroyed ; those produced elsewhere are reported to the council of the county in which the farm is situated and similar action is taken, the results of which are reported to the council of the district where the infected milk is being sold.

Under the Tuberculosis Orders the farmer is supposed to notify any cow which is, or appears to be, suffering from tuberculosis of the udder or from indurated or other chronic disease of the udder, but before this condition is recognised by the farmer there may have been much damage done, since the affection may only be recognisable by him when it is in an advanced condition. Regular examinations of milking herds by veterinary inspectors, as carried out in some counties, is therefore called for as a first step in the early detection of infective animals and in the elimination of tuberculosis from the dairy herds of the country. This would bring about the disappearance of all the most active cases of the disease, and if this procedure were followed by the tuberculin testing of all stock, a good deal of progress could be made in getting tuberculosis-free herds. A comprehensive and bold scheme is urgently needed.

THOMAS ORR, M.D., D.Sc.,
Medical Officer of Health and School Medical Officer, Ealing.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. B. R. Bickford is placed on the retd. list, with rank of Surg. Capt.

Surg. Lts. (D) to be Surg. Lt.-Comdrs. (D) : O. J. Barrable, E. R. Longhurst, H. N. V. Barnes, D. H. le Marchant, and D. L. Simpson.

The following appointments are notified : Surg. Comdrs. H. L. Douglas to Royal Naval Hospital, Yarmouth, and A. T. Rivers to *President*.

ROYAL ARMY MEDICAL CORPS.

Maj.-Gen. J. S. Gallie, late R.A.M.C., having attained the age for compulsory retirement, is placed on retd. pay.

Col. J. A. Hartigan, late R.A.M.C., to be Maj.-Gen., vice Maj.-Gen. J. S. Gallie, to retd. pay.

Lt.-Col. E. W. Powell, from R.A.M.C., to be Col., vice Col. J. A. Hartigan.

Col. O. M. Harris, on ceasing to be empld., is placed on half pay.

Lt.-Col. E. M. Pennefather retires on retd. pay.

Temp. Lt.-Col. C. F. White to be Lt.-Col., vice Lt.-Col. E. M. Pennefather.

Temp. Lt.-Col. F. C. Sampson to be Lt.-Col., vice Lt.-Col. E. W. Powell.

Majs. H. E. Priestley and J. S. Dunne to be temp. Lt.-Cols.

Maj. R. B. Price, from the secd. list, is restd. to the estabt.

Lt. W. F. L. Hannay resigns his commn.

TERRITORIAL ARMY.

Lt. W. L. Lamb (from T.A. Res. of Off., R.A.M.C.) to be Lt.

Lt. M. R. Coolican to be Capt.

D. G. Robinson to be Lt.

ROYAL AIR FORCE.

Group Capt. H. Cooper is appointed Honorary Surgeon to the King.

Air Vice-Marshal David Munro relinquishes his appointment as Honorary Surgeon to the King on retirement from the Royal Air Force.

Flight Lt. J. F. McGovern is granted a permanent commission in this rank.

INDIAN MEDICAL SERVICE.

Majs. to be Lt.-Cols. : F. J. Kolapore, E. G. Kennedy, J. V. Macdonald, H. A. H. Robson, C. G. Howlett, C. Newton-Davis, R. C. Clifford, C. Newcomb, H. E. Shortt, T. A. Hughes, H. L. Batra, D. McN. Taylor, and W. O. Walker.

AUXILIARY ROYAL ARMY MEDICAL CORPS FUNDS.

The annual meeting of the members of the Auxiliary R.A.M.C. Funds will be held at 2.30 P.M. on Friday, April 11th, at 11, Chandos-street, Cavendish-square, W. 1, when the annual report and financial statement for the year ended Dec. 31st, 1929, will be presented, and the officers and committee for the current year elected.

THE Food Education Society (29, Gordon-square, London, W.C. 1) has issued a leaflet entitled Bread and Its Place in Diet. This is obtainable for 1½*d*., post free.

CROTCH v. MILES.

ACTION FOR ALLEGED NEGLIGENCE IN THE KING'S BENCH DIVISION.

THE hearing of this case before the Lord Chief Justice and a special jury was continued on Tuesday morning, March 18th.

Mrs. MARTHA HARRIET GORDON CROTCH, of "Auntie's Tea Shop," Place Peyra, Vence, near Nice, alleged that Mr. WILLIAM ERNEST MILES, of 14, Park-crescent, W.1, after performing on her the operation of sub-total hysterectomy for a large fibroid tumour, left in the abdomen a pair of 5-inch Spencer-Wells forceps, which were only discovered at an X ray examination made eight years afterwards. The Defendant denied that he left the forceps in her body, or that they were left in through any negligence or want of skill on his part or on that of any person for whom he was responsible. He also pleaded that the claim was barred by the Statute of Limitations, 1623.

MR. MILES'S EVIDENCE—(*continued*).

Questioned by Mr. RAYNER GODDARD, K.C., Mr. Miles said that four of five years ago he had replaced all his instruments by similar ones made of stainless steel. His housekeeper, Miss Doris Ruddock, had placed the old ones in a cardboard box—as they were condemned instruments—and they had been there ever since. He produced the six pairs of Spencer-Wells forceps which he had used in the operation on Mrs. Crotch. They were, he said, marked S I H; the S was near the screw, the I below it, and the H below that. The letters stood for the Holborn Surgical Instrument Company. He had bought these six pairs of forceps from the makers in—as far as he could recollect—1899 or 1900, since when they had been in constant use until he has discarded them for stainless steel ones. Asked to inspect the pair that had been extracted from the body of Mrs. Crotch, he said that it bore an H about a quarter of an inch below the screw, and about a quarter of an inch from the exact position where the S was on one of the forceps he had produced. The letters S I H appeared in the same order on each of his six pairs.

The forceps in question, with a pair of those produced by Mr. Miles, were handed to the jury.

Every surgeon, said Mr. Miles, used Spencer-Wells forceps, which were made in two sizes. Replying to Mr. Rayner Goddard, he said that he had served in the war for nearly five years. Thousands of Spencer-Wells forceps had been used in France during the war.

Mr. RAYNER GODDARD: Assuming that these forceps had been left in a person's intestine for eight years; is the state of corrosion such as you would expect after eight years' loss?—On looking at these forceps I see plating, and I cannot conceive that a pair of forceps would remain for any length of time and the plating be still there. I can produce a witness.

We will produce a witness with actual experience. Do you think that the plating could be visible on the forceps after eight years?—I should not say so, although I have no actual experience.

THE LORD CHIEF JUSTICE. What is the ordinary purpose for which an instrument like this forceps is used?—For picking up small vessels. When you have made an incision, and a small artery or vein or even a larger artery is squirting, it is nipped with the point of the forceps, so, and tied off. I do the tying except when it is rather awkward. If it is awkward my assistant holds the forceps and I tie, after which he takes the forceps off. If it is more convenient for him to tie, he ties and I take them off.

To a person who is not a surgeon an instrument like that looks like a pair of scissors, and a pair of scissors is an instrument with which you cut and which you then put aside. Those instruments, as I understand it, are used to be put in position and to remain in position?—No, if your Lordship means that they remain indefinitely.

No, to remain in an appreciable time to prevent bleeding—They could remain there until you occluded the vessel by a ligature.

You apply the forceps and leave it to stay the bleeding at the bleeding point?—Precisely.

Cross-examined by Mr. J. W. MORRIS.

As soon as these forceps arrived in this country after they had been extracted from Mrs. Crotch's body, you had every opportunity of examining them?—I had.

I think you first had an opportunity of examining them about a year ago or more?—Yes; somewhere about that.

These forceps are undoubtedly Spencer-Wells forceps?—Without doubt.

And without doubt they are 5-inch Spencer-Wells forceps?—I agree.

And without doubt they are forceps which have a screw?—Yes.

That is quite a distinct kind from the kind in which the two limbs are detachable?—Yes.

When you first saw the forceps you saw on them the letter H?—No, I did not.

When did you first see the letter H on them?—I saw it when I went down with Mr. Hempson to the Plaintiff's solicitors; there was one of the assistants of the Holborn Surgical Instrument Company there, and he scraped the forceps—with their permission—and then I saw it. That was the second time, and not so very long ago.

You do not for a moment deny that those forceps are of the type you used in 1920?—Certainly; they are of that type.

Are those forceps that were extracted your forceps?—I have no means of identifying them or of saying whether they are.

You cannot deny on your oath that those are your forceps?—These forceps have an H on them. I have no forceps that have an H on them only.

Do you prefer not to answer the question, Mr. Miles? You cannot deny on oath, can you, that those are your forceps?—I think I can.

Did you use those forceps in the operation on Mrs. Crotch in 1920?—I cannot possibly say, because I do not know.

Did you leave those forceps in Mrs. Crotch's body after the operation?—I do not know.

Do I understand that the forceps which you have produced this morning, and a pair of which you have there, were bought in 1899?—In 1899 or 1900, I should imagine.

When did you buy this particular one which I have in my hand?—I do not know which one of the six you have.

Were they bought at different times then?—I bought twelve forceps somewhere about that time.

But I have in my hand one of the six you referred to this morning?—Yes.

You say you bought twelve; when?—Somewhere about 1899, 1900, or may be 1901; I do not know.

You bought them from whom?—The Holborn Surgical Instrument Company.

What was the next occasion when you bought some 5-inch Spencer-Wells?—I never got any more 5-inch Spencer-Wells forceps.

Until the time you told us of this morning?—I bought in 1896 twelve pressure forceps from Arnold's; they were detachable forceps. I bought these six from the Holborn Surgical Instrument Company.

What do the letters "H I S," in that order, stand for?—I suppose the Holborn Surgical Instrument Company.

THE LORD CHIEF JUSTICE: At the time of the operation, how many of these instruments had you in your possession?—I had about twelve small pressure forceps.

All Spencer-Wells?—They were Spencer-Wells.

Of those twelve, I understand that you have produced six?—These six were in my special abdominal bag.

Where were the other six ?—I have got them.

You have got all twelve ?—Yes, but the others are not all by the Holborn Surgical Instrument Company. When I was serving in France, commanding No. 7 Red Cross Hospital, I used some of my own instruments. I handed them into the Quartermaster's stores, and when the hospital disbanded, I received six instruments in return, but any six that they produced ; some were Allen and Hanburys, some Arnold's.

But when you say that on Nov. 27th, 1920, you had twelve small pressure forceps, do you mean that they were twelve which you yourself had got from the Holborn Surgical Instrument Company ?—No, my Lord, I did not say that they came from the Holborn Surgical Instrument Company, because I bought twelve and took six out with me to France in 1914.

Are you in a position to say how many small pressure forceps of the Spencer-Wells type which you yourself had bought from the Holborn Surgical Instrument Company you had in your possession on Nov. 27th, 1920 ?—I had got these six, and I have got two which are unmarked, but which seemed to be Holborn Surgical Instrument Company's forceps, but there is no mark on them ; that is possibly because they were replated.

Mr. MORRIS. In answer to my Lord as to the number of forceps you had on Nov. 27th, 1920, you said " I had about twelve pressure forceps."—Yes.

Can you tell us precisely how many you had ?—I have got twelve now.

That is not the question, Mr. Miles. You were asked by my Lord how many pressure forceps you had on Nov. 27th, 1920, the date of this operation, and you made answer " I had about twelve."—Well, there are twelve.

How many precisely did you have ?—Twelve.

Why did you say " about twelve " ?—That may have been just an expression. I say now : " twelve."

Did you tell us that you were accustomed to great precision in these matters because you deal in multiples of three ? Why did you say to my Lord " about twelve " ?—What I probably should have said was " twelve."

I understand that you told my Lord in answer to a question that you have other forceps besides these six brought here this morning.

THE LORD CHIEF JUSTICE. You say—I may have misunderstood or misheard you—but I understood you to say : " Four or five years ago I substituted stainless steel instruments for those I was using ; I put the abdominal instruments into a special abdominal case, and Miss Ruddock put the old ones away in a cardboard box. I produce the instruments I was using at the time of the operation on the plaintiff, all six of them."—All six, together with the other ones of different types.

Are you in a position to account for and to produce all the surgical instruments of this nature—the Spencer-Wells forceps—which you had in November, 1920 ?—Yes.

At any rate they are not here ?—I have only got the six.

Mr. MORRIS. I understand, Mr. Miles, you referred to two others which you mentioned specifically. What were those two ?—The two that have no mark on them, but are identical in shape and form with those forceps, and the probabilities are that the lettering was obliterated when they were replated. Miss Ruddock will tell you that I used to send my instruments to be replated when necessary.

Where were those two bought ?—They were probably bought from the Holborn Surgical Instrument Company.

Probably ?—Because they have no mark on them I cannot say.

Where did you get them replated ?—At the Holborn Surgical Instrument Company.

And when they are replated, is the whole of the first plating taken off ?—I could not tell you. I do not know what process they use.

Do they come back with no mark on them ?—I could not tell you that.

How often do you send them to be replated ?—An instrument may last several years, and sometimes the plating will chip off the first time you use it. That is why I have stainless steel.

How long does it take to replate ?—I do not know.

But you know how long they were away from you ?—I generally send them away when I am on my holiday. That is a convenient time.

Mr. Miles stated that he had never bought forceps from either Allen and Hanburys or Arnold's.

Mr. MORRIS. What do the letters H I and S in that order mean ?—I cannot tell you. Holborn Surgical Instrument Company ?

That would be H S I, wouldn't it ?—I do not know ; I am not responsible for putting those letters on the instrument.

What does the letter H stand for ?—I should imagine, Holborn.

Was that forceps in front of you which was extracted from Mrs. Crotch's body made by the Holborn Surgical Instrument Company ?—Apparently, because it has got an H on it.

The company from whom you bought your instruments ?—Yes, but when I bought mine they did not mark them with an H only.

Have these in my hand been replated ?—I could not tell you.

Have the six you referred to this morning been replated ?—I could not possibly tell you.

Have you any records of dates when you bought these instruments and sent instruments to be replated ?—No, I cannot possibly remember, but I know that I bought these instruments early in my career and I have been practising for thirty years.

Mr. Morris put further questions about the instruments which Mr. Miles had taken to the war and those he had brought back ; Mr. Miles admitted that he could not remember exactly how many Spencer-Wells forceps he had taken out to the war, but he knew that he had left six Holborn Surgical Instrument Company forceps behind in his abdominal bag. No stock or inventory had ever been taken of his instruments.

Mr. MORRIS. You have heard, have you not, of the precise spot from which the forceps were extracted by the French doctors ?—Yes.

And you have seen the X ray photographs ?—Yes.

Were the forceps underneath the place where you operated in 1920 ?—I do not understand that question. I saw the place where the French surgeon marked on the diagram (an instructional model, put into Court) the spot from which he said he had removed those forceps. I say that he drew them longitudinally in the middle line ; those forceps were shown not to be longitudinal in the middle line by the X ray, and the X rays do not lie.

Mr. Miles then identified the anatomical parts on a similar model.

Mr. MORRIS. There is no doubt, is there, that the operation for the removal of the gall-bladder is one that entails an incision above the umbilicus ?—Yes.

And that for your operation of sub-total hysterectomy your incision was below the umbilicus ?—Yes, what we call a sub-umbilical laparotomy incision.

And your incision was down the median line ?—Absolutely in the middle line from the umbilicus to the symphysis pubis.

Is the place where these forceps are marked in ink on this model approximately underneath the line of your incision ?—In the place where he has put them, it would be, but that is not where they are shown in the X ray.

THE LORD CHIEF JUSTICE. You heard the evidence read on the last day—it was taken in France—and you know what was said of the place where the forceps was found in the body ?—It was in the " *petit bassin*," I think, my Lord.

Suppose that that forceps had been used for the purposes of the operation of removing the gall-bladder, the incision for that purpose having been made in the ordinary place for that purpose and that the forceps had then by inadvertence been left in : was it physically possible for the instrument to travel down to the space

where it was shown?—I think so, by the force of gravity. Moreover, there is another point. Supposing that a pair of forceps had been left in in that position and had descended by the force of gravity, the greatest resistance to the descent would be offered by the rings. The position shown in the X ray is perfectly consistent, in my opinion, with their having travelled down.

Mr. MORRIS. For how long after an operation for removal of the gall-bladder would a patient be flat on her back?—It depends upon the surgeon. I generally like to keep my patients in bed for three weeks after a big abdominal operation.

So that the force of gravity would be for three weeks a force quite different from the direction that you were indicating?—Possibly, but then I do not know that this patient was not put in a sitting-up position.

THE LORD CHIEF JUSTICE. You say that the drawing of the forceps is incorrect and does not tally with the X ray photograph?—That is precisely my contention, my Lord.

Assume that the X ray photograph is correct and suppose that that forceps had by inadvertence been left in the Plaintiff's body at the time when you performed your operation in 1920; could the instrument afterwards have been found in the place shown by the X ray photograph?—I do not think so, because my operation was entirely confined to the true pelvis, which the French call *le petit bassin*.

The two X ray photographs marked "B" and "C" in the depositions of witnesses examined at Nice and admitted in evidence during the hearing of the case *Crotch* v. *Miles*. They bear the legends:—(1) Mrs. Crotch: Radiographie de l'abdomen avant le lavement baryté (20,9,28); (2) Rapports du corps étranger avec la portion terminale du gros intestin (20,9,28). The interrupted line on the left-hand radiogram indicates the position of the incision made by Dr. Prat at the operation for the removal of the gall-bladder (see THE LANCET, March 22nd, p. 649).

Mr. Miles then gave a detailed anatomical description of the pelvis. He concluded—So if the round ligament had gone through the ring of the forceps, they would have been found at the level of the ilio-pectineal eminence instead of where they are shown in the X ray picture.

He then pointed out the discrepancy between the French surgeon's mark on the diagram representing the position of the forceps as estimated by him, and their position as shown by the radiogram.

Mr. Morris read the following questions from the evidence of the French practitioner, Dr. D. Maestracci:

Look at the two X ray photographs B and C; where do they show the forceps to be?—Inside the small pelvis on the right hand side.

Where were the forceps with reference to the external laparotomy section?—On the right half of the scar, underneath.

Mr. MILES. That is anatomically wrong.

Mr. MORRIS. Do you dissent from either of those answers?—Absolutely, they are anatomically wrong. The man was talking nonsense. This is the small pelvis, further down; they would have been here (indicating a point several inches higher). Anatomically, he is talking absolute rubbish.

THE LORD CHIEF JUSTICE. The *petit bassin* is what you call the little pelvis?—Yes; the true pelvis in English anatomy. He says they are in the true pelvis, and he is wrong.

You mean that the X ray shows they were there (*indicating a higher point*)?—Yes; I have no other evidence. The X ray shows they were there, and the X ray shows their relation to the skeleton.

Mr. MORRIS. You do not dispute that the forceps were found either inside the small intestine or in the folds of the small intestine?—I did not see them and did not take them out. I do not think they were in the small intestine.

You have no reason to doubt that they were at least in the folds of the small intestine?—Yes, they were in between the coils; I admit that.

THE LORD CHIEF JUSTICE. In between the coils but outside?—Yes. I am perfectly certain of that. (The witness illustrated how two surfaces of the peritoneum covering the small intestine might form an adhesion through a ring of the forceps. It was impossible, he said, that an adhesion could ever form between two parts of the mucosa lining the small intestine.)

Mr. MORRIS. Is it not a fact that bodies may work their way into the small intestine itself?—It has been known; I have known, for instance, of a swab ulcerating its way in.

How do you account for the presence of fæcal matter on those forceps?—I am not at all certain that it is fæcal matter. I should say it was an incrustation.

Supposing the French surgeons are right in saying that it is fæcal matter; how do you account for it?—If it is fæcal matter, probably the point of the forceps may have just perforated the bowel; that is just possible, but if it had been so, this patient would have contracted a very acute abscess with leakage, and the contents of the bowel would have been free to enter the abdominal cavity. When the forceps were removed, there would have been an enormous abscess cavity. That is why I do not think for a moment that the forceps were ever inside the intestine.

You have read the evidence of the French surgeon?—Yes, but that has no weight with me at all. I judge things on my own knowledge; I do not take anything that a Frenchman says or anyone else.

Do eminent medical men have differences of opinion when each thinks that the other is wrong?—Yes, but not on a question of anatomy.

You know that it is the view of French surgeons that forceps with a screw are not so sanitary as dismountable forceps?—Absolute nonsense of the worst type. It is easier to clean detachable forceps mechanically, but not to sterilise them. French surgeons can do what they like.

And British surgeons use screw forceps and not dismountable ones?—Certainly.

I understood you to say on Friday that the presence of forceps amongst the intestines would cause a swelling?—Naturally. You could not put that pair of forceps among intestines without it.

And the swelling caused by those forceps would cause the muscles or other covering to swell out?—Not the muscles. You would feel a tumour under them.

It would cause the muscles to bulge?—That is right.

If the muscles were bulging, would they bulge through the point in the abdominal wall where there was weakness?—Not necessarily, by any means.

Supposing an incision had been made in the abdominal wall, the line of that incision would not be as strong as the remainder of the wall?—Very often much stronger, but in stout people, especially after a strong fit of coughing, some of the stitches may break away, or the wound may bulge a bit. Ventral hernia is therefore quite a common thing. No ventral hernia, however, is produced by a foreign body unless it has been driven through the abdominal wall as by shrapnel in the war.

Does the ventral hernia take place at some point on the line of the incision?—Yes.

If you were explaining that to a layman, would a reasonable explanation be that the muscles had been displaced by the operation?—No, I do not think so. I should say that the scar would have stretched.

If there were some swelling or foreign body which caused pressing, it would press one way towards the urinary bladder and the other way towards the rectum?—If the foreign body were down in the pelvis it would, because the two organs are close together, but in this case it was not in the pelvis.

And if one of the symptoms in this case were urinary trouble—incontinence—might that have been caused by the presence of a foreign body?—Not necessarily, because cystitis is a common thing, and you very often get coli bacilluria.

Might it have been so caused?—I do not see how it could have been, unless the foreign body were absolutely pressing into the bladder.

And supposing it was absolutely pressing into the rectum; might there be what one French surgeon has called tenesmus?—Tenesmus is simple contraction caused by any irritating condition, such as colitis or rectitis.

Might it cause the trouble in defæcation?—If you had a pair of forceps pressing on the rectum, of course it would, but the X rays show that they were not there.

Mr. Miles, in answer to a question, explained the anatomy of the abdominal viscera. In reply to the Lord Chief Justice, he said that in neither of the two operations was it ever necessary to open the intestine.

Mr. MORRIS. You do not suggest, do you, that the leaving of a pair of forceps in a patient's body can in no case be due to the surgeon's negligence?—I do not say it is due to negligence; I say this: that one takes every possible care to prevent such a thing, because no one would willingly leave a pair of forceps in anyone's abdomen.

That is not quite an answer to the question. You do not suggest, do you, that, in any case in which a forceps is left in the patient's body, it is not due to negligence by the surgeon?—I cannot conceive of negligence, because every endeavour is taken to remove any forceps that you use if you do put them in there. It may be accidental, but that is not negligence.

It may be that the leaving in of a pair of forceps in a given case is the grossest negligence?—You can conceive that, but I do not consider that I have ever been negligent.

Might not the presence of a pair of forceps in the peritoneal cavity cause the gravest consequences, such as a complete puncture of the intestine?—Certainly.

Might that cause fistula and death?—I do not know about fistula, but it might cause an abscess.

It might cause peritonitis?—If it were septic, yes.

You will agree with me that a surgeon ought to do everything that is humanly possible to avoid such grave consequences?—Certainly and absolutely.

And that, if the surgeon counts his instruments before an operation, and again when the operation is over, he has an infallible test?—As near as you can humanly make it.

It is an infallible test if he only uses six Spencer-Wells forceps and has six before and six after?—Yes.

I gather that in your practice you count them yourself?—I always count my instruments when I take them and hand them over to the sister, and I always count them afterwards.

So, if these were your forceps, your system broke down?—Yes, but I deny that these are my forceps.

You will agree that the removal of all instruments is a vital part of the operation and that if a surgeon leaves forceps in a body he has not finished his operation properly?—Yes, but in an operation you are not dealing with a motor-car, where you can smoke your pipe and think about it. You must take your sister's word that the instruments are right. There is no getting away from that.

It is the practice of surgeons to keep a careful note of the details of an operation?—No, never particular details.

Have you got any notes of this operation?—No. I think that I must have made notes about it, but I have looked for them and cannot find them anywhere, though I have several notes of about the same date.

THE LORD CHIEF JUSTICE. This is one of the difficulties of trying a matter which is ten years old.

Mr. MORRIS. Do not surgeons in fact keep their notes for anything up to twenty years?—Yes, I could show you notes that I took in 1898 or 1899, but the notes of this case must have got lost when I moved.

Were there not other tumours which you had to remove in this case?—No, but there was some inflammation of the left Fallopian tube and ovary; there were a great many adhesions which were evidence of a pre-existing peritonitis.

Did other medical men come to see the particular matters that had been removed from Mrs. Crotch?—Only Dr. Wadd and Dr. Burn.

How many people were present at this operation?—I cannot be quite certain, but Dr. Wadd assisted me, Dr. Burn gave the anæsthetic, and there was a theatre sister and, I believe, one other nurse.

Mr. Miles said he thought he had operated in a room fitted out as a theatre for the occasion. He had not known the name of the theatre sister or whether she was regularly employed by Dr. Wadd or not. In reply to the Lord Chief Justice, he said he thought he had worked with her before, as he had previously operated at the Hydro three or four times.

Mr. MORRIS. You stated in your evidence in chief that you thought the theatre sister was competent; on what did you base that answer?—Dr. Wadd would say she was competent and would know she was competent, and as far as I can recollect she had been present at operations before. Moreover, it is generally possible to tell whether anyone is competent or not by the way in which they set about things.

When an operation starts you are in supreme control of everybody in the room?—I am in control, yes. I do not interfere with people.

Are you in supreme control?—I control them, but I cannot prevent them from saying and doing what they like. They are under my direction, but I do not understand the words "supreme control," because I cannot control anyone.

Is it within your power to tell a nurse to do a certain thing?—Yes, I can ask her, certainly.

Can you tell her how she is to do a certain thing?—I could, but I do not.

Supposing a nurse acted improperly during an operation, you have the power to turn her out of the room?—Yes, I should object to her, certainly.

Is the credit for a successful operation not attributed to the surgeon?—It generally is, but all the team get their due.

Mr. Morris read the passage from the judgment in Hillyer *v.* The Governors of St. Bartholomew's Hospital (2KB. 1909, 826) which deals with the responsibility of the surgeon for the actions of his assistants at an operation, and which held that they are under the sole orders of the surgeon. Mr. Miles concurred that this ruling conformed with sound surgical practice and agreed with the phrase "the surgeon is, for the time being, supreme."

THE LORD CHIEF JUSTICE. Of course the question there, Mr. Morris, was whether the governors of the

hospital were liable for damages, and it was held that the operation staff were not the servants of the governors. But it does not follow the other way round, that the nurses assisting at the operation are the servants of the surgeon.

Mr. MILES. (To Witness.) I understand from your evidence in chief that you keep a superintendence over what the others are doing in the room?—You cannot look to see everything that the nurse does, but there is an instrument table at your right hand and it is possible to glance here and there. As for the anæsthetist, I can never see what he is doing, and I rely on him to tell me whether the patient is quite well.

How long did this operation take?—In my recollection, an hour or more.

Mr. Miles said that he had done sub-total hysterectomies in 25 minutes, but that this one had been very complicated. He admitted having used 5-inch Spencer-Wells forceps of the type which he had produced, in the first stages before the peritoneum was opened. Asked whether he had gone straight on to another operation, he said that he had not.

Mr. MORRIS. Suppose that during an operation you find that you have not enough instruments of a particular kind, what do you do?—I know what I am going to do and take the number that is necessary.

If a patient is big and stout, there might not be more than six bleeding points?—There might, but if there are you ligature them off and put the forceps on to the vessel you divide at the next cut. You do not divide right through and get all your bleeding at once.

Have you ever had occasion to send for more instruments other than those which you have taken out for the operation?—I do not remember ever having done so, except that in a case in hospital you may suddenly want a special instrument; it is then procured.

Would there be instruments available at the Hydro?—I suppose Dr. Wadd has some, but I always make a point of using my own if possible.

(Mr. Morris questioned Mr. Miles on one of the X ray photographs.)

There is no doubt that the forceps on that photograph are shown as being opened?—No doubt whatsoever.

There is no doubt, is there, that there was never occasion to have forceps in that part of the body lying open?—There was not. What the picture shows was that they were not attached to the bleeding point.

Mr. Miles described the process of screening off the intestines with towels clipped together by Lane's tissue forceps. It would, he said, be impossible to use Spencer-Wells forceps for this purpose.

Mr. MORRIS. I understand that one of the four towels in this particular operation would be below the pubis?—Yes, just across the symphysis pubis.

After you have made your incision and when you have clipped some of the bleeding points with Spencer-Wells, you ligature them off, and take off the Spencer-Wells?—Either I or my assistant does it.

You would put those Spencer-Wells down on one of the towels?—Not necessarily. Sometimes I should if a patient is lying flat. You can put it down there or on the table, and the sister may take it.

According to your evidence, you are going to use Spencer-Wells again in a few moments?—Yes.

And you want them near at hand?—Yes.

It is considered desirable, is it not, to avoid moving instruments about too much for fear of infection?—They must only be touched by people with sterile gloves.

You told us on Friday that an instrument may get lost in a towel?—Sometimes at the completion of an operation you may find that a towel has covered up a pair of scissors or dissecting-forceps.

One of those might slip into the wound when you are taking away the towel?—Oh, no, that is untenable, because one is attending to the process.

In what position was the patient?—Horizontal.

So the towel below the pubis would be quite horizontal to contain instruments which you wanted to put there?—Yes, it is between the thighs.

And I understand that an instrument may get lost in the towel?—It is on the surface; it will not get lost there.

At the end of the operation is it your duty to have a good look round the wound before you sew it up?—Yes, at the field of the operation, but one does not want to rummage round the patient's inside. Surgical technique is, moreover, a ritual, and does not admit of looseness of expression. You say have a "look round." The surgeon is doing something.

What, then, is the appropriate phrase?—A careful search. You have your own eyes and your assistant's and sometimes you would feel as far as you could.

Feel in the wound?—Yes, after a hysterectomy, when you have completed your operation and the wound is still held open by self-retaining retractors, the pelvis is as open to you as the interior of your hat. Part of the ritual of an operation on the abdomen is what we call the toilet of the peritoneum, for ensuring that no raw edges are left, and that everything is tucked away, and small bits of blood-clot removed. The hollow is completely empty.

Suppose that after an operation you discovered that you were one instrument short; what would you do?—If, after a search outside no one could find it?

Yes; if the absence of a forceps was not discovered until you had counted your instruments after the patient had been sewn up, and you had reason to believe that a pair of forceps had been left inside the body. Would it be your duty to inform the patient?—I should certainly take steps to find out if they were there. I should not inform the patient unless I knew that they were there.

You would take an X ray?—Yes, I certainly should.

Questioned about the visit of Mrs. Crotch in 1921, after the operation, Mr. Miles admitted that Mrs. Crotch's recollection was more likely to be accurate than his own.

Mr. MORRIS. Supposing Mrs. Crotch had asked you whether she had another tumour, it would have been correct, would it not, as the uterus had been removed, to say that there was nothing now to which a tumour might adhere?—No, I could not have said that, because she might have had a tumour from another condition.

Mr. GODDARD said that you could not have noticed anything or you would have communicated with Dr. Wadd?—Yes.

I understand that you did communicate with him?—I either telephoned to him or wrote to him.

But you have no recollection what you told him?—No. I probably told him that I had seen Mrs. Crotch, but I have no impression on my mind that she had anything which would lead me to think that she was in trouble.

If Mrs. Crotch had your assurance that that swelling was something that she need not worry about, there was no more that she could do?—I do not agree that I said she had a swelling.

You have heard Mrs. Crotch's evidence that for the whole of the eight years she had what she described as an agonising catch of pain?—Yes.

Is that acute pain consistent with the presence of a pair of forceps in the intestine?—I could not say. I have known many people with foreign bodies in their insides during the war, but I do not recollect any of them, unless they had an abscess, complaining of acute pain.

And her evidence that she had some measure of ease in lying down rather than walking about; is that consistent with the pressure of a pair of forceps?—There are many other things that might produce it. I have no experience of a patient with a pair of forceps inside him, but I have had experience of patients with bits of shrapnel five or six inches long, and have taken them out.

And these other troubles of which she has told us—the urinary incontinence, and so forth—are they

consistent with the presence of forceps?—There again I cannot tell you, because I have had no experience. A patient may have urinary and rectal symptoms from a variety of causes.

But amongst those causes would be the presence of a pair of forceps?—I do not think so, unless they were absolutely pressing or ulcerating through the bladder or rectum.

Re-examined by Mr. RAYNER GODDARD.

Mr. Miles said that forceps lying as shown in the X ray picture would not be pressing against or touching the bladder in any way.

In 1920, where did you keep your spare instruments, if you had any?—I had a specially made box with three tiers like a suit-case, with one part which I could use as a steriliser.

Mr. Miles said that he had never used Spencer-Wells forceps for fixing towels. He had not performed another operation that day. He took his own nurses when he operated at a strange nursing home, but from his experience of Dr. Wadd's hydro he had not considered it necessary. Dr. Wadd was a very excellent surgeon, and he relied absolutely on his judgment.

MISS DORIS GERTRUDE RUDDOCK.

Examined by Mr. RAYNER GODDARD.

Miss Ruddock said that she was housekeeper to Mr. Miles, and that between 1919 and 1924 she had been in charge of all his surgical instruments. He had had two instrument bags, one rectal and one abdominal, and instruments were never transferred from one to another.

Mr. GODDARD. What were the instruments placed in as they were put in the bag?—They were placed in two separate cubicles especially made for instruments.

Did you sterilise the instruments when Mr. Miles came back from an operation?—Yes, always.

Did you count them?—Yes.

In his presence or not?—Yes, in his presence.

And when you had sterilised them, what did you do with them?—I recounted them in Mr. Miles's presence and put them in the box again.

In 1919 and 1920, what Spencer-Wells forceps had Mr. Miles in his abdominal bag?—He had six.

Miss Ruddock said that these were always the same six. There were no Spencer-Wells forceps in the rectal bag. She had never seen any other Spencer-Wells forceps in the flat in which they had lived at that time. Mr. Miles had had a case of instruments apart from the abdominal and rectal bag, but she could not say whether these other instruments had been kept at the flat or at the consulting-room, as she had been concerned only with the bags.

THE LORD CHIEF JUSTICE. Do you mean that, in addition to the contents of the bags, there was an instrument case where other instruments were?—They were not at the flat.

But wherever they were, is that what you mean: that, apart from the contents of the two bags, there was somewhere an instrument case containing other instruments?—Yes, but not at the flat.

Miss Ruddock stated in answer to Mr. Goddard that when Mr. Miles went out to an operation he used to say whether it was to be a rectal or an abdominal operation, and she used to lay the instruments out and he would count them with her, put them back into the tins, and shut the box. They would be the same instruments as had been used at the last operation and which she had sterilised and counted in his presence. She had never known him go out with either more or less than six Spencer-Wells forceps. He purchased a new set of stainless steel instruments at some time—about four years—after 1920. She had then placed all the old instruments in a box (produced) and put them away in a cupboard in the consulting-room at Park-crescent. She identified the six pairs of forceps which had been in the abdominal bag and said that she had never known him have any others in that bag. Since the cardboard box with the old steel instruments had been put away, she had never had occasion to go to it until 1928, when Mr. Miles had had a letter from the solicitors. The box had then contained the six Spencer-Wells forceps produced in Court, nine Lane, and six Kocher. This was the exact number that Mr. Miles had used in his abdominal bag. She had never had to do with any other forceps but these.

Mr. GODDARD. How many needles and so forth did Mr. Miles have in his bag?—He used to count the needles himself except a few needle-holders.

Yes, but how many other instruments were there in the tin?—Three knives, three scissors, and six Moynihan clips.

THE LORD CHIEF JUSTICE. And those formed the contents of the abdominal bag?—Yes, except, of course, the clamps; that is, one retractor and one clamp.

Cross-examined by Mr. MORRIS.

The witness said that she had been with Mr. Miles since he had come back from the war. The instruments which he had brought back from the war had been in a case at Wimpole-street; she had not got them mixed up with any other instruments, as she was only looking after those in the abdominal and rectal bags. This case had been at Wimpole-street until it had been moved to the flat in 1924. It had been kept locked up. She did not work in fixed hours, and lived at the flat.

Mr. MORRIS. If you were out and Mr. Miles came back from an operation, and if it is important to sterilise at once, he might do the sterilisation?—I was never out when Mr. Miles went to an operation, in case there should be any messages for him. It is very seldom that I go out at all.

Mr. Miles might do his own sterilisation?—He would not. I have never known him do it.

THE LORD CHIEF JUSTICE. What is the operation of sterilisation? Does it take some time?—It takes about three-quarters of an hour.

Mr. MORRIS. And after the sterilisation you say that Mr. Miles always counts his instruments with you?—Yes.

It must have happened sometimes that Mr. Miles was not there?—Mr. Miles was always there. I never used to touch them unless Mr. Miles was there, and he never used to touch them unless I was there.

Who decided when instruments needed replating, you or Mr. Miles?—If one needed replating, Mr. Miles would see it at the same time as I did.

And who would do the replating of it?—The Holborn Surgical Instrument Co.

Who would send it there?—I would take it there myself.

How often did it happen that Spencer-Wells were sent to be replated?—It is hard to say, but they were not done more than six-monthly or yearly, and never unless Mr. Miles was on holiday and could afford to send them.

Do you remember anything about the marks on these instruments before they were replated?—They had the same marks on as the original ones.

The witness stated that she had never had an inventory or written list of the Defendant's instruments but had been able to account for all of them in her head. There had been no Spencer-Wells in the rectal bag.

Re-examined by Mr. GODDARD.

The witness said that she had that morning gone to Park-crescent and brought all the ordinary steel Spencer-Wells forceps that she could find. None of these had been at the flat or in the abdominal bag, but in the case at Wimpole-street, to which she had never had occasion to go. Inspecting these forceps, she said that three were marked Arnold, two Allen and Hanbury, and one H S I. These were the only other forceps in the possession of Mr. Miles.

In answer to Mr. Morris, Mr. Goddard said that this last envelope contained seven forceps in all.

DR. HENRY RANDALL WADD.

Examined by Mr. RAYNER GODDARD.

Dr. Wadd stated that he was medical superintendent of the Hydro, Richmond Hill, had known Mr. Miles very well for some years, and had sent a great number of patients to him for operation. Mr. Miles had performed certainly 100 and probably 200 operations at the Hydro, a large number of them before 1920. In that year the staff had consisted of about eight nurses. The theatre sister at the operation on Mrs. Crotch had been a Nurse Brown, a qualified general nurse who had been present at many previous operations. She had been a very competent nurse indeed. In answer to the Lord Chief Justice, he said that he had not at that time had an operating theatre at the Hydro, but that Nurse Brown had performed the same duties as were performed by a theatre sister. Nurse Brown had unfortunately died about five years ago. He knew of Mr. Miles's methods; he had always acted as his assistant at the operations which Mr. Miles had performed at the Hydro.

Mr. GODDARD. How would you describe him and his system so far as care is concerned?—He is always scrupulously careful. He makes a practice of always counting his instruments himself before the operation, and he puts them out himself, always arranging them in multiples of three.

At the end of the operation, does he count them himself, or does he leave that to somebody else?—One of the nurses washes the instruments and then, as a rule, they are put out on the table. I have seen Mr. Miles count them and put them back into his bag; or it might so happen that the nurse put them back.

The witness approved of Mr. Miles's practice of making the incisions at the hysterectomy operation in three stages. When the peritoneum was cut there were no Spencer-Wells forceps on the patient, the field of operation being absolutely clear. Until the peritoneum was cut, nothing could fall into the abdominal cavity. Mr. Miles did not use Spencer-Wells in the abdominal cavity at this operation.

Mr. GODDARD. At what stage, if any, in the operation does Mr. Miles inquire of the nurse if the instruments are right?—Just before closing the peritoneum; otherwise, if one were missing, he would have to open the peritoneum again and prolong the operation.

In your judgment would it be in the interests of the patient that the surgeon should stop the operation to count the instruments himself?—Certainly not, especially in a case like this, where every moment was of the greatest importance. It might have meant that the patient would have been under the anæsthetic for another five minutes and the probability would then have been that she would not come off the table alive.

The witness said that Dr. Burn, the anæsthetist, had reported that the heart action was bad and the patient very collapsed. It was the practice in English surgery to delegate the counting of instruments and swabs to the theatre sister. The surgeon generally turned to the nurse and said, "Are the instruments alright? Have you counted your sponges?" If the nurse reported that they were all correct, the surgeon closed the abdomen.

Mr. GODDARD. Can you pretend to have any definite memory of whether Mr. Miles put the question on that day?—I am certain that he did, because if he had not done so I should have. It was a universal practice of his.

Dr. Wadd then said that at the operation Mr. Miles had divided the adhesions with scissors and had controlled bleeding points with Reverdin's needle and tied them off, as he always had done. He had used no forceps in the cavity. No instruments had been sent for during the operation. Mrs. Crotch had made a good convalescence with no abnormal features. He had visited her in January and February, 1921, when she had been suffering from insomnia and nervous exhaustion. Her general health had not been good and she had undergone great worry, which had retarded her convalescence. She had, however, had no symptoms which might have led the witness to suppose that anything was wrong with her. There had been no swelling on the abdomen. He had examined the scar from time to time. She had consulted him again in May, 1922, and had complained of not feeling well and of sleeping and eating poorly. She had, however, not complained of any trouble in the abdomen or he would not have advised her to go out to India. He had himself performed both hysterectomy and gall-bladder operations of the kind in question. Asked whether a pair of forceps used at the gall-bladder operation could have been found in the position indicated by the X ray photograph, he said that it was certainly possible after the patient had begun to walk about, but not while she was still lying horizontal. He would expect them to drop the position in which they were shown, resting on the small intestine. He did not think that the forceps would have been found in that position if they had been left in after Mr. Miles's operation. If Mr. Miles had left a pair of forceps on the round ligament they would have been shown in a much lower position, outside the abdominal cavity altogether, with the peritoneum closed over them. In order to get into the position shown they would have had to work their way up, which they could not possibly have done. Moreover, the photograph showed them point down, a position which would have been impossible, as they would have had to work their way up rings foremost. He had seen any number of Spencer-Wells forceps on sale in France, and had himself bought English instruments in Bordeaux and Paris.

Cross-examined by Mr. MORRIS.

Dr. Wadd was asked to compare the position of the H on the forceps which were found in the Plaintiff with that on a pair of those produced by the Defendant. He said that the H on the pair produced seemed to be slightly nearer the screw, but on further inspection with a lens he admitted that they were practically in the same position. Nurse Brown, the theatre sister at the operation, had often acted in that capacity for him; the second nurse was on his regular staff, and the third had come in for this particular case. A few days after the operation he had told Mrs. Crotch exactly what had been done and what was wrong with her.

Did you tell her that Mr. Miles had had a terrible time?—No, I certainly did not.

Did you tell her that Mr. Miles had removed a tumour as big as a football?—No, there are various sized footballs; there would not have been much sense in that.

Did you say that the tumour had stuck in her pelvis?—I told her that it was impacted.

Did you tell her that there were eight other tumours to be removed?—No, there were not eight other tumours; a fibroid does not have separate tumours.

Did you illustrate it to her by saying, "Why, there was a whole family of them?"—No, of course I didn't. I told her exactly what tumour she had and that it was impacted in her pelvis, which is quite a common thing in fibroids. I told her that that was why she had the symptoms she had, and what made the operation so difficult.

Were there not other tumours in addition to the large one of which we have heard?—Not separate tumours at all; there was one large tumour with small tumours on its surface.

Did you use an expression to her to this effect: that her inside had been chopped to mince-meat?—Of course I did not.

Is it not a fact that for a very small bleeding point it is not the practice to use the Reverdin needle, but it is the practice to use a 5-inch Spencer-Wells?—If I saw a very small bleeding point I do not suppose I should bother about it at all.

Suppose you were dealing with a very small one which you did bother about?—If an adhesion were bleeding I should transfix it always, to prevent the suture from slipping off.

Is it not much simpler to use a Spencer-Wells than a Reverdin needle for small bleeding points?—It is more simple but much less safe. Every bleeding point ought to be transfixed.

Dr. Wadd was further cross-examined at some length on the details of the operation, and re-examined by Mr. Rayner Goddard.

DR. HAROLD KINGSTON GRAHAM HODGSON.

Examined by Mr. H. C. DICKENS.

Dr. Hodgson said that he was honorary radiologist to certain hospitals. He had examined prints taken from the radiogram of the Plaintiff's abdomen which had been taken in France.

Mr. DICKENS. Take the model on which Dr. Fay has marked the position of the forceps. Are they in the same position as that shown in the X ray?—No, they are in quite a different position.

Dr. Hodgson marked on the chart the position of the forceps as shown by the X ray.

THE LORD CHIEF JUSTICE (to the jury). This witness has marked the forceps as being much higher than as shown in the chart when it was first marked, and also to the left as one looks at the body, or to the right of the body as the body is.

Mr. DICKENS. To your trained eye there are sufficient landmarks visible on this print to enable you to come to that conclusion with certainty?—Yes.

Dr. Hodgson then marked, on the part of the chart illustrating the skeleton, the position of the stump of the round ligament together with the position of the forceps. The round ligament was, he said, fully six inches from the ring of the forceps.

THE LORD CHIEF JUSTICE. Then it was impossible that the round ligament could have passed through the ring of the forceps?—Completely impossible.

The upper end of the forceps, Dr. Hodgson said, was just on a level with the normal position of the umbilicus.

Mr. DICKENS. Assuming that during Mr. Miles's operation the intestines had been moved out of the way above the field of operation and the power of gravity allowed to exert itself, would you have expected to have found the forceps in the place where the X ray photograph shows them, or lower down?—If they moved at all, gravity would tend to move them downwards, and they probably would move.

There is a considerable space below where they are shown to be?—Yes.

Mr. Dickens referred the witness to the dotted line a few inches above the forceps in the skiagram representing the incision made at the gall-bladder operation, and asked:

Is it conceivable that an instrument left in the body at that operation could reach the position in which it is shown on that photograph?—Yes, it is conceivable.

Cross-examined by Mr. MORRIS.

I understand that it is clear from these X ray photographs that the forceps is lying in the middle of the small intestine?—No. I should like to understand what you mean. Do you mean in the middle of the gut itself?

No, lying amongst the coils of the small intestine?—There are coils of small and large intestine, all disposed about this part, and one cannot see from the X ray whether that pair of forceps is up against the small or the large intestine.

Would it be correct to say that the X ray photographs reveal the forceps to be in the lower half of the abdomen and that their point is directed towards the small pelvis?—Yes.

SIR HUGH MALLINSON RIGBY.

Examined by Mr. RAYNER GODDARD.

Sir Hugh Rigby said that he was a Fellow of the Royal College of Surgeons and honorary surgeon to His Majesty the King. He stated that he knew Mr. Miles and his work very well. Mr. Miles had the reputation of being a very careful surgeon. Asked whether he thought that the precautions Mr. Miles had described were proper precautions, he answered "If I may say so, I think he sets a standard which the ordinary surgeon cannot follow."

Will you tell us a little more what you mean by that?—He always counts his instruments himself, he says, in addition to his theatre sister, and I think there are very few surgeons who do that.

Are there any precautions which you can think of which a careful surgeon should take and which he has not taken, assuming his account of his own procedure to be accurate?—I cannot think of any.

Sir Hugh said that the procedure described by Dr. Prat as current in France would not be in accordance with the standard prevailing in this country, and would not indicate a reasonable standard of care. He said that the theatre sister's duties was to be responsible for the instruments and their sterilisation and to look after the ligatures, towels, and swabs to be used. Theatre sisters were very highly trained and were given responsibilities in this country which they were not given in others. He did not think that any one person could be responsible for all the details of an operation. His own practice was to leave the counting to the theatre sister, and if she had not got her right number of instruments and swabs she reported the fact to him. Otherwise she said nothing at all, and he took it for granted that she had them unless he was working in a strange case or did not feel confidence in the sister. He did not think that other surgeons made it their practice to inquire if the number were correct. It was in the interests of the patient that this task should be left to the sister, because the surgeon had his hands full and often had to work at high pressure, and if he had to think about instruments and swabs would not be able to do his work in the proper way. Even if he had received warning that an instrument or swab was missing, it would not be in the interests of the patient to search the wound for it, as the extra manipulation would be very harmful. After an operation some of the instruments might be on the floor and the surgeon could not touch them.

Hernia at the scar was quite common after operation and would cause pain. It was very unlikely that the swelling described by Dr. Stevens could have been caused by the forceps in question. Swelling could only have been caused by matter in the bowel round the forceps, and a swelling big enough to be visible from the outside must be a very large one and could not be mistaken for a hernia. Inflammation of the gall-bladder was very common after dysentery. The gall-bladder infection could only be caused by the presence of a pair of forceps if there were infection from the bowel. He had not heard anything in this case to suggest that infection was set up in the bowel. From the X ray picture, he considered it possible that the forceps might have been left in after Dr. Prat's operation.

Cross-examined by Mr. MORRIS.

The evidence of the Plaintiff concerning the pains for which she had consulted a doctor in India was read out to the witness.

Mr. MORRIS. Are those pains consistent with the presence of a pair of forceps in her intestine?—Quite consistent.

Is it possible for a pair of forceps lying between the folds of the small intestine to work its way actually inside the tube of the small intestine?—Yes, it would be quite possible for parts of the forceps to enter the lumen, but not the whole.

If that occurred, might another symptom be trouble in defæcation?—I do not think that is at all likely.

Would not some form of inflammatory swelling be set up?—Yes, when the forceps perforated the bowel.

Would that inflammation tend to cause pressure against the rectum on one side and the bladder on the other?—Yes, if it were right down in the pelvis.

Might this cause the urinary trouble which the patient had complained of?—Yes.

Supposing that there was a foreign body actually in the small intestine, might there be some infection which would go upward and cause the metallic taste in the mouth which the patient described as like the taste of rusty nails?—That is very unlikely.

Could you tell me what would cause that persistent metallic taste?—There are certain medicines that cause it.

Might the presence of the forceps cause it?—I do not think so, I cannot see any connexion at all.

I understand that you can get an infection ascending from the bowels to the gall-bladder?—Yes.

That infection has an upward trend?—Yes, but that is an indirect infection of the gall-bladder. The organisms get in from the small bowel to the blood and then by the blood to the wall of the gall-bladder.

Sir Hugh said that he thought the stoutness of the patient did not affect the number of bleeding points in the early stage of the operation. If there were multiple tumours in the abdomen, there would be more bleeding points, which might sometimes be picked up by forceps of the kind in question. A surgeon often inspected the wound just before he closed it to see if any bleeding point had been left. Instruments were not often put on the patient but usually on the small tables fixed to the operating table, or standing by the surgeon.

Supposing you had ligatured a bleeding point and removed the pair of forceps and were going to use the forceps again in a moment, would you not put them down on one of the towels; for example, the towel which would be below the pubis in this operation?—You might.

Might there not be a number of instruments, a dozen or more lying about?—Yes.

Do you not agree that the counting of instruments is always only a means to an end, the end being to see that no instruments are left in the patient's body?—Yes.

I gather that there is nothing to prevent a surgeon from checking his instruments himself after the patient has been sewn up?—Nothing at all, after he has finished his operation.

And, unless the surgeon counts wrongly or is negligent in his counting, that test ought to be infallible?—It ought to be, but in practice it is impossible; it is not carried out.

THE LORD CHIEF JUSTICE. This Defendant says he did it. You say that the standard imposed in this case is a standard higher than the ordinary surgeon would be expected to observe?—Much higher.

Re-examined by Mr. RAYNER GODDARD.

Sir Hugh Rigby said that he had heard Mr. Miles's evidence dealing with his own use of the aneurysm needle in the abdomen instead of forceps; that method was recognised as satisfactory, and there was then no necessity to use a Spencer-Wells. In reply to Mr. Morris, he said that the use of the aneurysm needle was not confined to larger blood-vessels, but was a matter of individual taste.

SIR THOMAS JEEVES HORDER.

Examined by Mr. RAYNER GODDARD.

Sir Thomas said that he had known Mr. Miles as an operating surgeon for about 25 years, and that Mr. Miles had operated on a considerable number of his patients. The Defendant's methods were those of a careful surgeon. The witness himself attended at serious operations. He knew Mr. Miles to be very careful in his methods of checking his instruments: if he had not thought so he should not have nominated him to operate on his patients. Sir Thomas enumerated the persons who usually took part in a surgical operation. The duty of checking instruments, swabs, and sponges was laid upon the theatre sister.

Is the surgeon himself in your opinion able to do that?—I regard him as responsible for the sister's competence to do it, but I should not regard it as in the patient's interest that he himself should feel it necessary constantly to watch the instruments in the last stages of an operation.

THE LORD CHIEF JUSTICE. It is said that at the conclusion of an operation, after the patient has been sewn up, there may be a duty upon the surgeon to see that the count is correct, so that if it does not appear to be correct, the mischief can at once be attended to. What do you say to that?—I agree, my Lord; that is the surgeon's responsibility. I regard the surgeon as being ultimately responsible for all these matters.

Mr. GODDARD. Is there any possible precaution that you can suggest beyond counting the instruments before and after the operation?—Assuming that the counting is done by a competent person, I cannot suggest any further precautions. That seems to have reduced things to the simplest and safest of terms.

THE LORD CHIEF JUSTICE. What would be your observations upon a surgeon who said, "Nobody counts the swabs and nobody counts the forceps?"—My Lord, I should not nominate that surgeon to operate upon my patients.

Sir Thomas said that after an abdominal operation there was always some pain, but not necessarily considerable pain. There was always some abdominal pain after a hysterectomy; in a normal case this pain continued for a few days, perhaps two weeks, depending upon the idiosyncracy of the particular patient. He had seen quite a number of cases of ventral hernia after abdominal operations. This was due to several factors, including the extent of the operation, the extent of the incision, and the personal idiosyncracy. Obesity and lack of muscular tone were great determining factors. This ventral hernia was not usually accompanied by pain, but pain might be present. He should not expect the presence of a pair of forceps in the abdomen to manifest itself by an external lump unless considerable inflammation and suppuration had occurred, and an abscess had formed. A lump could only be formed by an abscess.

Mr. GODDARD. The Plaintiff has stated that from a very early stage, two or three months after the operation, a lump the size of a cocoanut appeared on her abdomen in the neighbourhood of the scar. Could that be caused by the presence of the forceps?—No.

The surgeon who operated in France for the gall-bladder trouble stated that the gall-bladder was very diseased and thickened and adherent to the surrounding parts. Would that condition be consistent with a sudden onset of gall-bladder trouble, or would it indicate a chronic state?—A chronic state with possibly acute complications, but it sounds as though it had been in existence for some years.

Patients might complain, Sir Thomas said, of gall-bladder pain in any part of the abdomen, if for no other reason than the associated flatulent dyspepsia. He described the cause of dysentery and said that gall-bladder infection was not a usual consequence. The presence of a pair of forceps in a fold of the intestines could not cause either gall-bladder trouble or dysentery. Judging by the symptoms as described to him by Mr. Goddard, he assumed that the forceps had not penetrated the small intestine.

Cross-examined by Mr. MORRIS.

Sir Thomas Horder stated that it was impossible to say whether the adventitious matter on the forceps was fæcal matter or not. From its appearance it might be, but its nature would only be certain if a chemical analysis were made. He had had no experience of a case in which a pair of forceps had been left in the body.

A foreign body lying within the coils of the intestine might penetrate it. In answer to the Lord Chief Justice, he said that perforation was necessarily accompanied by irritation and ulceration. A foreign body would inevitably cause the formation round it of fibrous tissue, and adhesions were the result of inflammation. Blood in the fæces might be caused by the presence of a foreign body. An abscess might form around a foreign body even if it were sterile.

Mr. MORRIS. After the gall-bladder has been almost entirely removed, ought not the symptoms to disappear?—It is most desirable that they should, but they do not always do so. There is no "ought" about it.

If there were a persistence of some pain identical with pain that had been existing for a long time, would not the irresistible inference be that that pain was not one of the gall-bladder pains?—Not irresistible.

Would it be a most probable inference?—If, as I understand it was, the gall-bladder in this case was very grossly diseased, I should think it would be optimistic to expect a hundred per cent. freedom from discomfort after its removal.

Would it be a most probable thing for the persisting pain to discontinue?—I should hope persistent pain would disappear if the diagnosis had been correct.

If a pain which had been persistent disappeared after forceps were removed, would the interference be irresistible that the pain was caused by the forceps?—Your word "irresistible" is one with which we are not familiar in medicine, but if you will talk in terms of probabilities, then I should say that if the patient had complained consistently of a pain, and that a pair of forceps such as I have seen had been removed from the abdominal cavity, then even I should be optimistic enough to hope that the pain would disappear.

The witness was not re-examined.

MISS SARAH JANE KINGMAN.

Examined by Mr. RAYNER GODDARD.

Miss Kingman said that she was a State-registered nurse. Between 1920 and 1924 she had attended many operations at the Hydro. She remembered the operation upon Mrs. Crotch quite well; it was the first operation performed by Mr. Miles at which she had been present. She had worked with Nurse Brown, who was a very competent theatre sister. She had helped to wash the instruments after the operation, but it had been the duty of the theatre sister to count them. There had been ample time to count them, as the theatre sister had very little to do at such an operation. The instruments had been counted after this operation; this was a sacred duty. The sister knew how many there should be, because she had sterilised them before the operation and had then counted them with the surgeon. That also was a sacred duty.

Cross-examined by Mr. MORRIS.

Miss Kingman said that she had been employed at the home and had not come in specially for the operation. The average number of operations at the Hydro was not one a day.

DR. HENRY EDMUND GASKIN BOYLE.

Examined by Mr. DICKENS.

This witness stated that he had given anæsthetics for Mr. Miles for about twenty-five years at many operations. He testified that Mr. Miles was a very skilful and careful surgeon indeed. Mr. Miles always used large forceps inside the peritoneum and small ones at the beginning of the operation for picking up the vessels before the peritoneum was cut. The large forceps were called Kocher forceps. By the time the peritoneum had actually been severed the small forceps had been removed from the table. This was the invariable practice at Mr. Miles's operations. He had been struck many years ago by Mr. Miles's practice of putting out his instruments in multiples of three, a practice from which he had never known him to depart. He would hand them to the theatre sister in threes or multiples of three and she would put them into the steriliser. At the end of the operation he would ask the theatre sister if the count was correct; he had never known Mr. Miles fail to do this. Mr. Miles brought his instruments to the theatre in a regular bag, and would lay out only those which he required.

Cross-examined by Mr. MORRIS.

The witness stated that even if a patient's heart was reported to be failing, he did not allow panic. He admitted that the anæsthetist could not always follow every step of an operation.

This witness was not re-examined.

DR. JOHN SOUTHERDEN BURN.

Examined by Mr. DICKENS.

Dr. Burn stated that he had given the anæsthetic at the operation on Mrs. Crotch. Before and since this time he had given many anæsthetics for Mr. Miles. He corroborated the testimony of other witnesses concerning Mr. Miles's practice in counting his instruments with the theatre sister. The theatre sister, he said, would be able to say at any stage of the operation how many instruments were in the body. Mr. Miles would never sew up the wound without getting information from the sister that all the instruments had been accounted for, and according to the witness's recollection he had never departed from this practice. Mrs. Crotch had not borne the operation very well, but had collapsed somewhat towards the end. The witness remembered this particularly, having a particular reason to do so. He had seen English-made forceps, including Spencer-Wells, sold in Étaples at the end of the war; they were surplus Army stores and were going very cheap.

Cross-examined by Mr. MORRIS.

Dr. Burn said that the only structure removed at the operation had been a fibroid uterus; no other tumours had been removed.

If the patient was not taking the operation very well, what would be the effect upon the remaining course of the operation?—The operation would be completed as soon as and as safely as possible.

Would the termination of the operation be in any way expedited?—Yes; Mr. Miles might be able to put on a little extra speed which he would not use if there were no hurry.

This witness was not re-examined.

THE LORD CHIEF JUSTICE'S SUMMING-UP.

Counsel on either side having addressed the jury, THE LORD CHIEF JUSTICE said that this was a case of no little importance and difficulty. The case for the Plaintiff could not have been more elaborately and emphatically presented than it had been by learned counsel, but he warned the jury against being misled by the appeal to the emotions which had been quite legitimately made by her advocate. The task the jury had to perform was a scientific, not an emotional one. He continued:—

"Let me refer to one expression used yesterday by the Counsel for the Plaintiff. I do not know what impression was conveyed to your minds, but it seemed to me to be intended that should this action result in a decision adverse to this eminent surgeon it would involve no reflection on his general skill and standing. Can you accept that suggestion? It is quite idle to say that the reputation or the skill of the Defendant is not involved in this case. But the question is not whether it is desirable or permissible that a patient who undergoes an operation should afterwards be going about with a forceps in her body—nobody suggests that, and everyone must have the greatest sympathy with this lady—but the question here is, who did it? When

something which excites strong feelings of passion or indignation has happened, if the mind is allowed to be filled with those feelings, do they help it in a strictly scientific inquiry?

"The learned Counsel for the Plaintiff began the last passage of his speech by a rhetorical enumeration of the points he conceived to be strongly against the Defendant. He said in effect, 'You are told that these instruments and swabs are not counted when an operation is done in France? What does that matter if you are satisfied that these were the forceps of the Defendant?' I choose that question as indicating to you the kind of fallacy into which it would be most unfortunate to slip. You are inquiring whether these are the forceps of the Defendant. How can you be satisfied that these are the Defendant's forceps when you now know by the mouth of the Plaintiff's own witnesses that forceps and swabs are not counted in France? Of course, if you are satisfied that these are the forceps of the Defendant, what was done in France does not matter. But it is vital to have regard to what was done in France in order to know whether you may properly inquire whether these are the Defendant's forceps. Let us put the matter the other way round. Suppose that the evidence about the operation conducted by Dr. Prat in France was that for years he had been conducting operations with the assistance of a careful method deliberately designed by himself to prevent an error about the number of instruments or swabs; suppose that Dr. Prat had been able to say, 'I have designed a system of multiples of three. I count myself, the theatre sister counts, I check the counting of the theatre sister.' Suppose that had been the evidence about Dr. Prat's operation, and suppose when it came to Mr. Miles's operation he had had to say, 'I never count at all, and nobody counts for me, it is not done,' how indescribably stronger the case against the Defendant would have been. Now, you see, the position is reversed. The evidence of care in counting and of method in counting is the evidence of the Defendant and the evidence given on his behalf, and it is conceded that in French operations there is no counting by the surgeon or by another. You may think it right to say that the measure of the additional strength that would have been given to the case against Mr. Miles if the position had been reversed is the measure of the assistance which his case derives from the knowledge which you now have that in the French operation there is no counting."

His Lordship then laid down the questions which the jury had to decide:—

(1) Is it established that the forceps were left in the Plaintiff's body in the course of the operation performed by the Defendant?

(2) If so, was that fact due to negligence on the part of the Defendant or for which he is responsible?

(3) The question of damages, if it arises.

He then discussed the question of damages. In addition to the medical fees and expenses incurred, he pointed out that the Plaintiff claimed £500 lost by her through having to leave Paris because of her ill-health. He asked the jury whether it was right to attribute that loss to the presence of these forceps. There was also a claim for £100 loss on profits in the Plaintiff's business, an antique shop at Vence, near Nice, which she had had to give up. This, however, related to the period antecedent to the following on the operation carried out by Dr. Prat for gall-stones. Two things were involved in this claim—namely, that the trouble in the gall-bladder was caused by the presence of the forceps, and that in consequence of the necessity of that operation this loss of £100 was incurred. The question with regard to these and other figures was whether the jury thought it clear that these losses had been incurred and were attributable to what had been done or omitted at the operation in 1920.

The Liability of the Surgeon.

Lord HEWART continued:—Nobody denies for a moment that if a surgical forceps is left in the body of the Plaintiff in the course of a surgical operation, that patient ought to have a remedy in damages against somebody. The whole question here is, however: Is the liability of this Defendant made out? If you are satisfied that it is, you will not hesitate by your verdict to give expression to that view. There are few things so extraordinarily difficult to trace with certainty and assurance as the relation of cause and effect. What you are invited to do here is to say that it is established beyond reasonable doubt that this surgical instrument was left in the Plaintiff's body in November, 1920, under circumstances which involved the operating surgeon in personal liability. What is the personal liability of the surgeon? It is not quite a simple question. As the case went on and the evidence accumulated, the question underwent a certain development, and it is necessary to distinguish between different things. Let me remind you of a passage in the evidence that was given on commission on behalf of the Plaintiff by Dr. Fay, the surgeon who carried out the final operation for the removal of the forceps, in September, 1928. He stated that for operations of this kind the surgeon must be assisted by a team—an assistant, an anæsthetist, and one or two sisters, and each member of that team has his or her particular part in the operation. Dr. Fay was asked, "If the surgeon knows and trusts the members of the team, he will not interfere with their particular part in the operation?" The answer was "Yes." "He will not interfere with the giving of the anæsthetic?" "Quite so." Dr. Fay was further asked, "Is it not the practice of the surgeon to leave the counting of the instruments and swabs to a sister?" Dr. Fay answered, "It ought to be like that." A further question was, "Then it is possible for the surgeon or his assistant to leave instruments or swabs in the body without personal negligence?" and the answer was "Yes, it is possible."

Let me remind you of what was said by Mr. Miles as to the usual practice. He described to you in detail his method based on an enumeration of threes, and how when he arrived at the scene of the operation he handed over the instruments to the theatre sister. "I count them out to her and show her that they are in threes and multiples. She sterilises them and lays them out on the special table. This is done while I am making myself aseptic. In an abdominal operation like this the incision is made below the navel; it goes through the skin and the subcutaneous tissue and fatty tissue, and always there are three or four bleeding points. I use Spencer-Wells 5-inch pressure forceps to seize these vessels to enable me to tie them. I generally do the tying and my assistant removes the forceps. Sometimes it is the other way round."

Lord HEWART then read other portions of Mr. Miles's evidence, showing the method whereby the carefully trained theatre sister carried out the counting of the instruments and swabs. He continued: All the evidence on this question of the relative responsibilities and liabilities of the theatre sister and the surgeon has come from the Defendant's side. The Plaintiff's evidence is extremely interesting for what it says. You may think when you apply a critical eye to it that it is in some places not less significant for what it does not say. The evidence of the doctors in France taken on commission, and on this particular point the evidence of Dr. Fay, is that you look to the theatre sister. Not so with the evidence adduced on behalf of the Defendant. Sir Hugh Rigby stated that in attendance at the operation are the surgeons, the assistant, the theatre sister, generally two nurses, and the anæsthetist, that the theatre sister is responsible for the instruments, the sterilisation of the instruments, the towels, and the swabs, and that she is very highly trained for this work. Sir Hugh Rigby said, "In our country she is something quite apart. She is especially trained for this duty, and has responsibilities which sisters in other countries are

not given because they are not trained. I do not think one person can be responsible for all the details of the operation. The duty of counting instruments or swabs falls, according to the usual practice in this country, upon the theatre sister." Then came this passage, of no little importance in this case. "My own practice is to do nothing"—this is Sir Hugh Rigby speaking, the King's surgeon—"and if the sister finds that she has not the right number she tells me. If I hear nothing I take it that all is correct. It is very seldom that I myself inquire. If I were working in a strange place, or did not feel confidence in the sister, I might do so." Sir Hugh Rigby also said that it was in the interests of the patient that the duty of counting should be left to the sister. He said that unless he was warned by the sister he was not expected to make a search. It would be against the interests of the patient for the surgeon to have extra manipulations to perform. He went on to say that the standard of care in this matter of enumeration which was set and observed by the Defendant was a standard higher than the ordinary and a standard to which the ordinary surgeon could not be expected to attain.

Then came Sir Thomas Horder. Sir Thomas Horder is a physician, and he expressed the physician's point of view. He regarded the ultimate responsibility as depending upon the surgeon. He said, "I agree that the surgeon's responsibility is at the close to check the counting. I regard the surgeon as ultimately responsible in all these matters." What emerges from that evidence, and from other evidence like unto it? You may think it is right to draw a distinction between what is done in the course of the operation and what is done immediately at its close. It may well be that in the actual course of the operation, while the surgeon is cutting and opening and attending to his surgical task, it is not to be expected nor desired that he should be busying his mind with the counting of instruments or swabs or with the question of whether a swab or instrument is missing. But you may think that other considerations apply at the close of the surgery itself. It may well be that any delay might be highly prejudicial if it occurred before the body of the patient was stitched up, but after that you may think that before the surgeon departs it is reasonable that he should personally satisfy himself that the number is correct, and that there is nothing missing. Mr. Miles says that he does that. Sir Hugh Rigby said that it is not usual, and he himself does not do it. These questions are very material as regards the second question I have put to you, but that question, of course, does not arise at all unless you are satisfied that the forceps were left in the body of the patient at the operation of 1920. If you are satisfied as to that, the question then arises as to whether this was due to negligence on the part of the Defendant or negligence for which he was responsible. This is not quite a simple question. What is it that the surgeon undertakes? I quote the words of Lord Chief Justice Tyndall a hundred years ago, but unimpaired in their effect:—

> "A person entering a learned profession undertakes to bring to the exercise of it a reasonable degree of care and skill. He undertakes to bring a fair, reasonable, and competent degree of skill, and you will say therefore in this case that the injury was occasioned by the want of such skill in the defendant."

Skill must be also accompanied by diligence, and you have to decide (if this question arises) what exactly are the position and the responsibilities of the surgeon in the matter. Of course, you and I are looking back upon this matter after the event has happened. There are few things so unhelpful as the wisdom that follows the event. You have to put yourselves for this purpose at November, 1920. Was it in November, 1920, part of the duty of the surgeon personally to count the instruments and satisfy himself that the number was correct, or was he entitled to say that there was present a skilled theatre sister, that this was her job, and that he was entitled to act upon her report? She is not his servant, she is one of the team. We can all make mistakes. I suppose it is quite conceivable that somebody in an individual case might miscount a certain instrument. You have to address your minds to this question: suppose the theatre sister did miscount and thought there were six of these instruments when there were only five, is the Defendant responsible for that happening? Is it a breach of duty on his part that the theatre sister made that mistake? You may think it is linked up with the question as to what he did afterwards. If the evidence given on behalf of the Defendant in this case is accepted, it is exceedingly difficult to entertain the view that this forceps got into the Plaintiff's body in November, 1920.

Apropos of that observation, let me remind you of this, that when in these Courts a Plaintiff is seeking to recover damages for something wrongful which is said to have been done actively or by omission, then the burden of proof is on the Plaintiff to show that that complaint is made out, and is made out against the very Defendant. The proof is not the other way round. It is not for the Defendant to prove a negative. Indeed, as this case has gone on, you may have reflected how wise our ancestors were in devising Statutes of Limitations, preventing some kinds of action being brought after four years, and most kinds of action from being brought after six years. Why? Because it is so uncommonly difficult to recollect with accuracy what precisely was done so many years ago. It would be intolerable if, when an allegation was made about something done nine or ten years ago, the burden of proof were upon the Defendant. In the extremely difficult question of tracing cause and effect we must never lose sight of the fact that the burden of proof is upon the Plaintiff. If you are satisfied that that burden has been discharged, the conclusion is clear, but if you are not satisfied, if you are left in real doubt, equally the conclusion is clear, that the case is not established."

Lord HEWART then remarked that this type of accident, revolting to the mind as it was, was a sort of accident that happened very rarely. In more than thirty years' experience of courts of law he himself had never known anything like it. It was something very rare, but if there was no counting by the surgeon or by anybody on behalf of the surgeon, was it difficult to understand that such a thing might conceivably happen? Might not the absence of counting explain how it came to happen? The thing which was being dealt with here was a thing called a forceps, superficially like a pair of scissors, but having a very different function. The function of the forceps was to hold firmly. When the bleeding points were exhibited in the course of the operation the forceps were used to take up each point, pinch it, and stay the bleeding. The forceps having played its part, there followed the use of the ligature, and when the ligature was put on the forceps might be removed. The effect of this was that the forceps might be there for an appreciable time; there might be a row of forceps, and when the forceps were removed, if there was no counting, and especially if the patient was rather stout, the loss of a pair of forceps was a thing which might possibly happen. The fundamental contrast between the practice in counting on this side of the Channel and on the other was the first thing that leapt to the eye. The next thing was the remarkable contrast in the Plaintiff's evidence as between the amount of medical evidence relating to 1926 and the paucity of such evidence during the period from 1920 to 1926. Mr. Miles, in his evidence, had said that when the patient came to him in May, 1921, to the best of his recollection there had been no hernia, because if there had been he would have reported it to the patient's doctor, Dr. Wadd, and would have suggested a belt. Dr. Wadd had testified that he had seen the patient in January and February, 1921, that she had had insomnia and nervous exhaustion, as well as domestic worry, but that she had never led him to think that she had anything wrong with

the abdomen. There had been no swelling, no hernia, no bulging; she had never directed his attention to any lump. The Plaintiff had afterwards gone to Margate and stayed there till the end of September. She gave a poor account of her condition, but no doctor who had seen her at Margate had been called to give evidence. In India and in Paris there was again no medical evidence. If that forceps had been in the lower part of her abdomen during those five and a half years, how came it that there was this gap in the medical testimony? There was, of course, the evidence of Dr. Stevens, whom the Plaintiff consulted in 1921, 1922, and 1923. Altogether, spread over those years, there were 21 occasions on which Dr. Stevens had his attention directed to the Plaintiff. He had said that the Plaintiff was complaining of pain low down in the abdomen, swelling in the middle line of the abdomen, attacks of nausea and vomiting. He knew of her operation, and said that she had had a ventral hernia. Ventral hernia was a very common sequel to an abdominal operation in a fat subject. Dr. Stevens had never suggested that it was a case for an X ray examination to see if there was some foreign body left in the abdomen. Was it to be supposed that if, by manipulation or otherwise, Dr. Stevens had detected the presence of a foreign body, he would not have called for an X ray examination? His conclusion had been that that which he saw was consistent with the ordinary consequence of an abdominal operation. How came it also that nobody who had examined the Plaintiff in Bombay had suggested an X ray photograph? The Plaintiff had said that the lump had always been there, about the size of a small cocoanut. The doctors in the hospital at Bombay had examined her and, presumably, noticed a lump. Was it to be supposed that these medical men, if they had suspected the presence of a foreign body, would not at once have taken steps to see whether there was not some foreign body there? The Plaintiff had said that the pain had continued daily for eight years until the removal of the forceps. The question was whether that was not an exaggerated statement. She had also said she had felt as if she had been eating rusty nails. That expression threw a good deal of light on this story. Who knew what it felt like to have eaten rusty nails? Was it not the very sort of picture which might occur to a somewhat imaginative person looking back after a period of time when she knew that a pair of forceps had actually been discovered in her abdomen?

Lord HEWART then asked whether it was credible that if during all this time she had been suffering in the way she had described, and had had a lump of this kind, she would not have seen the surgeon who had performed the operation. She had explained the fact that she was silent about it by saying that he had assured her on her visit in May, 1921, that there was nothing vital the matter and that she must regard this sort of thing as a necessary consequence of the operation. Finally had come the operation of June, 1926, by Dr. Prat, and the Defendant had suggested that this forceps had been left in the Plaintiff's body by some inadvertence on that occasion. The proof that this was so did not fall upon the Defendant, but what he said was that, when all the surrounding circumstances were considered together with the actual course of the operation of 1926, it could not be said that these forceps had entered the patient's body during the operation which he had performed in 1920.

JUDGMENT.

The jury, after a short absence, found that it had not been established that the forceps had been left in the Plaintiff's body in the course of the operation performed by the Defendant.

The LORD CHIEF JUSTICE thereupon entered judgment for the Defendant, with costs.

Special Articles.

MEDICAL INVENTIONS AND PATENTS.

VIEWS OF THE BRITISH SCIENCE GUILD AND THE JOINT CHEMICAL COMMITTEE.

A REPORT on reform of the British patent system, recently issued by the British Science Guild (6, Johnstreet, Adelphi, London, W.C. 2. 2*s*.), dealt incidentally with the patenting of biological inventions. The Committee was appointed by the Guild in April, 1927, to consider what changes could advantageously be made in British patent law, and only reported after holding 18 full meetings and preparing and circulating many memoranda. Its chairman was Mr. W. H. Eccles, F.R.S., President of the Physical Society, and its hon. secretary Capt. C. W. Hume, B.Sc., joint hon. secretary of the Guild. In an introductory note the fundamental object of the patent system is described as an encouragement to the establishment of new industries and the improvement of old ones by the granting of temporary monopolies, owing to the protection afforded by which manufacturers and financiers are induced to risk their energy and capital. In the absence of a patent system the practice of secret working grows apace, and this may well cost the manufacturer more than the open working of a patent system, and have the further objection of postponing or even preventing publication. Holland, which abolished its patent system in 1869, reinstated it in 1912 owing to the decline in its manufactured exports. The patent system, it is held, is useful to the community in a variety of indirect ways; inventors are encouraged to embody their ideas in specifications which promote the free circulation of new ideas, while the collected specifications record the growth of applied science hardly possible in any other way.

Research and Invention.

Modern research has, however, altered the volume of invention, notably in the chemical and biological sciences, and has made it harder than it was before to define an invention, for invention may be a flash of intuition or it may be the result of a system of research by a scientific staff. It is difficult to draw a clear distinction between such a process of research and the use by a skilled workman of the known rules of his art—and in law no patent is valid unless the invention contains "subject matter." In practice the Guild sees no reason why patents should not be granted to protect improved biological products, and considers it desirable to extend the interpretation of the word "manufacture" so as to permit of the patenting of a wider range of biological inventions. In view of the strong contrary opinion of the medical profession the Guild considers that biological inventions subserving medical treatment should not be patentable.

Taking this report as the basis of consideration, the Joint Committee, including eight of the principal chemical associations of the country, has formulated its own proposals, which have now been issued in a memorandum (from the Joint Chemical Committee, 116, Piccadilly, London, W.1. 1*s*.). Mr. A. Rée, Ph.D., and Mr. F. H. Carr, D.Sc., have acted as chairmen of this Committee, which had Mr. J. Davidson Pratt, F.I.C., for its secretary. The Joint Chemical Committee acknowledges the services rendered by the Guild in indicating clearly the need for changes in our present system and in submitting constructive proposals to this end. Medical inventions are dealt with in a short section of the memorandum, and in great detail in an appendix thereto.

The subject of patents for inventions subserving medical treatment has received long and detailed consideration from the Joint Chemical Committee. While it is at present permissible, the memorandum

states, for patents to be obtained for medical inventions, the position is very unsatisfactory, and British industry and research are being handicapped in that the results of British investigations are being exploited by foreigners who have not the same feelings in regard to medical patents as the British medical worker. Some solution of the difficulty should be found which will meet the objections of the medical research worker to patents on ethical grounds and the desire for sufficient protection on the part of the manufacturer, whose coöperation is essential if the public is to obtain full value from new medical discoveries. There is a choice between :

1. No medical patents at all, being the view advocated by the British Science Guild in regard to biological inventions in the medical field ;
2. A system of medical patents devised to meet the two points of view already indicated.

While a non-patent system may find favour in medical circles, it does not afford the necessary protection to manufacturers, and may in practice lead to the extended use of secret manufacture and secret remedies, with results which are objectionable both on general grounds and in regard to the restrictive effect on further research. In any case, the abandonment of medical patents by this country, without international agreement on the subject, would place both our research workers and our manufacturers at a serious disadvantage.

The Present Position.

Section 38A (1) of the Patents and Designs Acts 1907 and 1919 (Consolidated), is as follows :—

" In the case of inventions relating to substances prepared or produced by chemical processes or intended for food or medicine, the specification shall not include claims for the substance itself, except when prepared or produced by the special methods or processes of manufacture described and claimed or by their obvious chemical equivalents ; provided that, in an action for infringement of a patent where the invention relates to the production of a new substance, any substance of the same chemical composition and constitution shall, in the absence of proof to the contrary, be deemed to have been produced by the patented process."

Under this Section, therefore, it is possible to take out patents for medical remedies, which may be divided roughly into two main classes :

(*a*) Definite chemical compounds, with a specific effect in certain diseases. Such inventions usually arise from purely chemical investigations, and the medical research worker only intervenes at the stage of pharmacological and clinical trials ;

(*b*) Biological productions such as vitamins, insulin, serums, vaccines, &c. These products generally originate with the medical research worker, but the chemist (or biochemist) comes in, during the later stages when isolation and investigation of the active principles (e.g., adrenalin, thyroxine) of such products is attempted.

These two classes may overlap, but it is clear that there are two groups of workers concerned—chemists and medical research workers.

Medical Objection to Patents.

Chemists as a body appear to have no objection to taking out patents for substances used for medical treatment, since eminent chemists, including university professors, are to be found among British patentees of such products. It is, however, quite otherwise with the medical profession, a large section of which is believed to be resolutely opposed at present to taking out such patents, whether they be of purely chemical or biological origin, and the following are the two main arguments advanced.

In the first place, the medical profession is peculiar in its special relation to human life and suffering, and when doctors prescribe a particular drug they are expected to be free from any suspicion of financial bias in its choice. A patent in relation to any medical remedy tends at first sight to give the impression of making profit out of human suffering.

The second and more important objection, the validity of which is, however, doubtful, is that the freer use of patents would result in greater secrecy on the part of research workers, whereas the fullest and freest interchange of knowledge and mutual assistance between workers in different laboratories is essential for progress.

Secrecy would undoubtedly have a very adverse effect on medical research because of the complexity of the problems, and the necessity for the full and rapid publication of all information bearing on them. There is, however, some doubt as to how full and early publication can best be assured.

Knowledge and Reward.

The object of our patent law is to stimulate invention by offering a reward, and to extend industry in this country by the application of new discoveries. In other fields it succeeds in that object, even though in them, as in medicine, it often happens that the patented invention does not benefit the actual discoverer of the knowledge on which the invention depends. While this is a state of affairs very difficult to avoid or to remedy, it is important to seek for compensating influences thereto. The border line between discovery and invention is very difficult to define in medical fields. A medical discovery is often the culmination of years of progressive research by many workers, and it is manifestly unfair that the worker who is lucky enough to take up the work at a certain stage when most of the work has been done, and who merely puts the finishing touches to it, should be able to reap the sole monetary reward of the cumulative effort. Such a state of affairs usually discourages scientific workers who have contributed largely to the research on which the invention is based, when they find that the knowledge they have freely provided is being monopolised by the inventor of perhaps merely a small addition or modification. The fact remains, however, that the general motive of most scientific workers is the satisfaction of advancing knowledge and not monetary reward.

Three Instances.

The memorandum proceeds to glance at the circumstances surrounding one or two important instances in which the question of patents has been involved in connexion with inventions subserving medical treatment.

1. *Insulin.*—In 1923 Dr. Banting made the final addition to a long series of discoveries by which the preparation of insulin was rendered possible. This was protected by a patent taken out in the name of the University of Toronto, where Dr. Banting was working. The British patent rights were offered by the University to the Medical Research Council, whose action in accepting them caused much unfavourable comment in the medical profession and some opposition by important men of science. It is understood that the Council did so on the grounds :

(*a*) That the patent was better in their hands than in anybody else's ;
(*b*) that it enabled them to exercise the power which was necessary in order to secure the proper use of the knowledge and to control the manufacture of insulin, there being at that time no Therapeutic Substances Act by which this could be effected.

It is agreed that events have fully justified this action, as it has resulted in insulin of the highest quality being now available at very low cost, owing to the fact that the few firms to whom the manufacture was entrusted were enabled thereby to devote considerable energy and capital to developing efficiency in manufacture and a high quality of product.

2. *Thyroxine.*—At the time that Dr. Harington published all but the final stage of the synthesis of thyroxine, he decided not to patent this method, and thus he left unguarded the possibility of other workers, perhaps abroad, obtaining a monopoly of synthetic thyroxine by discovering the last step. As it happened, Dr. Harington was later successful in completing the synthesis, which was never patented. Though there is now no master patent, there remains the danger, however, that some foreign manufacturer may become possessed of some patent which, though

of minor importance in itself, would enable him to cut out the British manufacture by price competition, since the British maker would not be free to use the patented and consequently cheaper method.

3. *Vitamin D.*—The example set by Toronto University has been followed by Wisconsin University. Steenbock patented the irradiation of foodstuffs for the purpose of rendering them antirachitic. The knowledge that some foodstuffs possess antirachitic properties and that the irradiation of animals, and even of their cages, cured or prevented rickets, had previously been reached as the culmination of much research in which British workers played a leading part. The University not only used the patent to demand royalties in this country for using knowledge which had to a great extent been discovered here, but also claimed that it covered a later and much more important discovery, which was unsuspected when the specification was drawn up. This discovery, largely to be credited to workers also in this country and published without any idea of patent application, was that the substance ergosterol becomes the true antirachitic Vitamin D, when irradiated. This is an instance of the unfair advantage which can be taken by those making full use of the patent system over those who refuse to do so. Attempts are now being made by a foreign firm to gain control of the manufacture of Vitamin D by numerous patent applications concerning the particular conditions and methods of irradiating ergosterol. The position has thus become further complicated.

Foreign Exploitation.

It will, therefore, be seen that a new factor has been introduced into the question—namely, the exploitation of the results of British research by workers in other countries, who do not hold the same opinion in regard to the ethics of medical patents. This exploitation is usually effected by the well-known method of making a small improvement in the published method, and patenting it in this and other countries. In practice, this leads to the result that the British worker is prevented from using his own discovery. While there is a patent law which is freely used for medical inventions in other countries, and only half-heartedly so used in our own, because of the feeling of British medical research workers that it is improper to profit by royalties out of curing the sick, the present exploitation of the results of British research by other countries is bound to continue.

Protection or Secrecy.

In this connexion it is important to bear in mind that one of the underlying ideas in medical research is to discover new products which can be used by the medical profession for the treatment of disease and the alleviation of human suffering. To enable full use to be made of such discoveries, it is necessary that the production and sale of the new remedy shall be efficiently developed on an adequate scale. To do this the coöperation of chemical manufacturers is necessary, but before a manufacturer can undertake the necessary financial commitments, it is only natural for him to expect some assurance that he will obtain a reasonable return on the outlay which is required to enable the manufacture to be taken up on such a scale, and in such a manner, that the remedy can be put cheaply at the disposal of the medical profession and the public in the most suitable form. Such an assurance is best obtained by some sort of protection against unrestricted competition; such competition is likely to defeat the object which at first sight it seeks to attain—viz., the improvement of quality and the reduction of price. In this connexion it should be noted that part of the medical research carried out in this country is done in the laboratories of industrial companies, and if these concerns are to be in a position to maintain their research activities, it is essential that they shall have suitable protection either by patents or trade marks. The only alternative to this is the preservation of secrecy, which is undesirable.

British Science Guild's Proposal.

Enough has been said to show that there are two points of view to be reconciled.

1. The objection of the medical research worker to patents on ethical grounds; and
2. The desire for sufficient protection on the part of the manufacturer whose coöperation is essential if the public is to obtain full value from the discovery.

At present these two views are in opposition, but it is very necessary both from the point of view of the medical profession and from that of national prosperity that agreement should be reached. The following suggestion has been made by the British Science Guild (Para. 18):

"That the interpretation of the word 'manufacture' should be extended so as to permit of the patenting of a wider range of biological inventions; and we think that the practical difficulties involved in such an extension are not insuperable. *Biological inventions subserving medical treatment should not, however, be patentable in view of the strong contrary opinion of the medical profession.*" (Italics not in original.)

This proposal means, in effect, that medical remedies would be treated differently according to whether or not they are of a biological nature; some formula would therefore have to be devised to enable a decision to be made in any particular case as to the category in which a remedy fell. This would probably present considerable difficulty. Apart from the objections of the medical profession, it would seem that the proposal of the Guild to differentiate between chemical and biological substances for medicine is illogical and does not afford a satisfactory solution of the problem.

There seem, says the memorandum, to be only two alternatives to consider for medical inventions, viz., (*a*) no patents at all, or (*b*) a system of patents devised to reconcile the present conflicting views.

No Patents at all.

The main objection to no patents at all is that the necessary inducement would not be available to persuade firms to take up the manufacture of new remedies and that, as a result, the world at large would not reap the benefits it is entitled to expect from the new discoveries. There would also be a difficulty in that substances subserving medical treatment have in many cases other uses in respect of which a patent would be permissible; this should not, however, prove an insuperable difficulty. Further, it is not certain that the abolition of medical patents would not lead to undesirable secrecy in place of free publication of the results of medical research. The patenting of a new drug means that the process of manufacture and the composition of the drug are published in the patent specification, and the patentee is given a controlled monopoly for a limited period. A new discovery of this kind, when fully described, leads to the development of new ideas and to further investigations, all of which would be lost if medical patents were in this way replaced by "secret remedies."

In any case the abandonment of medical patents should not be adopted until international agreement on the subject is obtained. Unless the patent legislation in the different countries is brought into agreement, both research workers and manufacturers in this country will be placed at a very considerable disadvantage. If medical patents are excluded in this country, without similar action abroad, it will result in patents based on British discoveries, which would be freely at their disposal, being taken out in foreign countries, thus enabling foreign countries to make use of monopoly rights which would help them in introducing new medical products and retaining markets in those countries. The result will be that all markets in countries where patent legislation does not exclude medical patents will be in effect closed to British manufacturers. This will react to the detriment of the British medical profession and the public because the British manufacturers will thereby

have their scale of production restricted, with adverse effects on the price, and the public will thus be the real and ultimate sufferers.

The importance of international agreement on this point cannot be too strongly emphasised, and if an attempt is to be made to draw a distinction between chemical and biological products and processes, it is essential that the procedure finally agreed upon shall be the same in all countries. In the opinion of the Joint Chemical Committee no such alteration should be made in our patent laws before international agreement on the point has been reached. As such an agreement may not be reached for many years, it is necessary to give the most careful consideration to the other alternative.

Alternative of Dedicated Patents.

The suggested alternative is that provision should be made whereby medical patents should be dedicated to the British public and be administered by some Department of State. This scheme would work somewhat as follows. Every British patent in respect of inventions subserving medical purposes would be dedicated to the British public, and would be administered by a Department of State called for convenience the Medical Patents Trustee. It is intended that the Trustee should in practice act in consultation with an Advisory Committee, on which the medical profession would be prominently represented. The Trustee will be under an obligation to administer the patents in the public interest and grant as many licences as he thinks desirable to that end, or, if necessary, to declare the invention free and to allow no greater amount of monopoly than seems essential for securing the proper development of the invention.

Definition.—An invention subserving medical purposes means new or improved manufacture or production of substance(s) which find their primary and chief application in medicine for the diagnosis, treatment or prevention of disease in human beings or animals, for the production of anæsthesia and the prevention or alleviation of pain or suffering, but which do not include disinfectants, fungicides and the like not applied to the human or animal body. The term does not include substances whose primary use is extra-medical, except for processes which have for their sole object the rendering of such substances fit for medical use. The term does not include instruments or tools.

Procedure.

The Trustee will offer the first *free* licence to manufacture in this country to the inventor or his nominee, and even if this licence is taken up, he may grant such additional licences as he may consider desirable for such fees as he may determine, having regard to all the facts of each case. These fees will be paid to the Trustee and not to the inventor. If the free licence is worked to the Trustee's satisfaction within the period which he stipulates, and here he will be guided by the advice of his Advisory Committee, he may not grant any other *free* licence, and this state of affairs will persist during the lifetime of the patent, provided that the working of the free licence is satisfactory. He may at any time, however, grant as many other licences with consideration as he thinks fit, and the fees may be as low as he chooses to determine. If the first free licence is not taken up or is not worked satisfactorily, he may declare the invention free or grant as many licences with or without consideration as is desirable.

In deciding on the number of licences, the Trustee will keep in mind the difficulties which the manufacturer may have in developing the invention, the underlying principle being to ensure that the invention is utilised in the manner in which the public will derive most advantage both as to quality and price. The inventor will have the first option of taking out foreign patents, and if he exercises this he can deal with foreign royalties in the usual way. Should the inventor not desire to exercise his foreign rights, the Trustee may, if he so determines, take out and administer the necessary foreign patents; he can determine the royalties to be imposed in respect of such patents, or he can declare them free as he thinks fit.

If it be argued that it is undesirable that the Trustee, being a public official should take out and administer foreign patents, it is recommended that the option to take out foreign patents lie only with the inventor or his nominees. It is the intention that royalties imposed by the Trustee should be of a nominal character, and should not more than suffice to cover the expenses of administering the dedicated patents, any surplus which may accrue being devoted to medical research.

By making such dedication compulsory for all patents for inventions subserving medical purposes, whether taken out by British or foreign workers, the principle would be safeguarded that there can be no uncontrolled monopoly in Great Britain, publication would be assisted, and British workers would be protected from exploitation. Further, the administration of the patents by a Department of State would allow of an effective control over manufacturers by a system of licences, and would provide the necessary inducement for firms to develop the new remedies. At the same time it allows the medical worker to contribute to the application of new knowledge by patent publication without the least suspicion that he is monetarily interested.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Working of the Local Authorities Act.

IN 1926 the Local Authorities (Officers and Employees) Act became law in the Irish Free State, and under its provisions the power of appointment of officers of local authorities was transferred from the local authorities to a central body set up for the purpose and termed the Appointments Commission. On Nov. 1st, 1928, the Dail ordered the appointment of a Select Committee of eleven deputies, to inquire and report whether, having regard to the experience gained in the working of the Act, any amendment of it was desirable. The report of this committee was published last week. The committee considered itself precluded from receiving oral evidence, but it invited representatives from professional associations likely to be concerned, as well as from the various local authorities throughout the country. It is worthy of note that less than half of the local authorities were interested enough to reply to the circular letter. The committee has made several important recommendations, of which the chief are here summarised:—

That promotions, as well as appointments, shall be controlled by the Local Appointments Commission

That provision should be made for competitive examination by way of written tests for all appointments to the public service other than appointments requiring professional or technical qualifications.

That for appointments requiring professional or technical qualifications, examinations should be held by the Local Appointments Commission acting by Selection Boards appointed for the purpose; that such Selection Boards in selecting candidates with a view to appointment should have regard to the post-graduate diplomas or similar distinctions and the experience of the candidates, the latter qualification to be ascertained by a practical test.

That it should be a statutory instruction to selection boards that, in assessing the relative merits of candidates in regard to the factor of personality, marks should be awarded only in respect of personal appearance and general bearing, and that the maximum number of marks prescribed under that heading should not be greater than is represented by 5 per cent. of the total number of marks obtainable.

That, with a view to the filling of appointments requiring professional or technical qualifications, rosters of qualified candidates should be framed by the Local Appointments Commissioners as often as the number of expected vacancies justifies it, but not oftener than four times a year.

It will be noted that the general tendency of the recommendations of the committee is toward (1) a more complete centralisation (as regards professional appointments), and (2) a better coördinated service. If they are made effective the further step of transforming the public medical service into a State Medical Service will be short and easy.

Actions for Damages for Alleged Illegal Detention.

An application was heard by Mr. Justice O'Byrne, in the High Court, Dublin, recently, to stay, on the ground that it was frivolous and vexatious, an action brought by Mr. Patrick Moore against Dr. J. O'C. Donelan, resident medical superintendent of the Grangegorman Mental Hospital, for damages for alleged illegal detention. Having heard counsel for Dr. Donelan, and the plaintiff who appeared in person, the judge made the order asked for.

He said that it appeared that the plaintiff was detained in Grangegorman Mental Hospital from May 6th to June 28th, 1927, and his action was concerned with that detention. It also appeared that he was apprehended by the Civic Guards and brought before Mr. Kenny, who was acting as District Justice in the Dublin Metropolitan Court. Mr. Kenny, acting in that capacity, made an order that the plaintiff be forthwith detained in the district lunatic asylum That committal warrant was admittedly made by Mr. Kenny in that capacity, and it had never been set aside. Mr. Moore was taken to the institution in pursuance of that warrant and detained. His lordship also referred to the order of the Chief Justice removing the plaintiff to the care of Dr. Eustace, and said that in the circumstances it seemed to him that there was no illegal imprisonment by Dr. Donelan. Not only was the detention of Mr. Moore not illegal, so far as Dr. Donelan was concerned, but Dr. Donelan was absolutely bound in pursuance of the warrant to take Mr. Moore into the institution and detain him until he was legally removed. It seemed to him that the action was frivolous and vexatious, and an abuse of the process of the Court, and could never succeed.

An action for damages on similar grounds taken by the same plaintiff against Dr. W. N. Eustace, of Hampstead Private Asylum, Dublin, was subsequently stayed on an application to Mr. Justice Sullivan. The plaintiff had been removed from Grangegorman Mental Hospital and put under Dr. Eustace's care by order of the Chief Justice, and had been detained there from June 28th, 1927, to Jan. 25th, 1929, when by a further order of the Chief Justice he was removed to Carlow Mental Hospital.

The same plaintiff also took an action for damages against Dr. M. S. Walsh, dispensary medical officer, for alleged negligence in the issuing of a false medical certificate on May 16th, 1927, thereby causing the plaintiff to be imprisoned in Grangegorman Mental Hospital. Dr. Walsh had been ordered by the District Justice to examine and give evidence as to the mental condition of the plaintiff. An application for a stay in this case was adjourned by Mr. Justice Sullivan for the filing of a further affidavit.

The Sweepstakes Bill.

The Public Charities Hospitals (Temporary Provisions) Bill, commonly known as "The Sweepstakes Bill," which was introduced to the Dail by Sir James Craig, and passed its second reading a week or two ago, has now been returned to the House after consideration by a Special Committee. It has been amended in several respects. One amendment provides that only hospitals which reserve at least 25 per cent. of their beds for non-paying patients, and which exercise no discrimination in the filling of the beds on the ground of the religion of the applicants, are to be permitted to enjoy the privileges granted by the measure. A non-paying patient is one defined as paying less than 10*s.* a week. By another amendment institutions are excluded from the benefits of the Bill if there be in their charter, constitution, or regulations any provision debarring any person from appointment to the staff solely because of his or her religious belief. Another amendment provides that the amount to be deducted as expenses for the conducting of a sweepstake shall not exceed 30 per cent. of the money resulting from the sale of tickets. It is doubtful whether the measure will become law or not. Public opposition to it has been increasing, and most of the religious bodies have denounced it as encouraging gambling. Certain hospitals, too, which a little time ago were willing enough to benefit by sweepstakes, are now publicly expressing their disapproval.

The Irish Radium Institute.

The President of the Royal Dublin Society (Prof. John Joly, F.R.S.), announced last week that it was proposed to appeal for further support for the Irish Radium Institute. This institute, which is conducted in association with the society, has often found itself unable to meet the demand for radium emanation required for therapeutic purposes. The society hopes to raise a sum of £12,000, of which £2000 has already been guaranteed. Dr. Joly rightly takes pride in the fact that the method of using radium emanation in needles implanted in the tissues, now commonly employed, was first introduced in Dublin.

The Queen's Institute of District Nursing.

The annual general meeting of the Queen's Institute of District Nursing in Ireland, usually known as the Jubilee Nurses, was held last week, and a satisfactory report was presented. A year or two ago a movement was on foot to disrupt the institute between the Irish Free State and Northern Ireland, but the attempt failed, and while each division of the country now enjoys a certain degree of local autonomy, the central control for the whole of Ireland rests with a Joint Council.

Vacancy on the Irish Medical Registration Council.

The regretted death of Mr. Maurice Hayes has caused a vacancy on the direct representation of the medical profession on the Medical Registration Council of the Irish Free State. Up to the present the only candidate who has announced his intention of coming forward is Mr. William Doolin, F.R.C.S.I. Mr. Doolin is a graduate of the National University of Ireland, and one of the Surgeons to St. Vincent's Hospital. He has been honorary secretary of the Dublin Local Medical Committee for several years, and is the editor of the *Irish Journal of Medical Science*.

ROYAL WATERLOO HOSPITAL.—The report for last year records an improvement in the finances, due principally to legacies, which were especially welcome since the accumulated deficit was becoming a serious embarrassment. There were 2098 in-patients who cost £8 1*s.* 1*d.* each for an average stay of 18 days, and 16,000 new out-patients; each out-patient cost 7*s.* 7*d.* A further extension of the out-patient department is necessary, but the difficulty of obtaining a site has been increased by the rise in the price of land in the neighbourhood consequent upon the proposed removal of Charing Cross Station to the south side of the river.

WOMEN DOCTORS AND MARRIAGE.—At the annual meeting of the governors of Birmingham General Hospital last week the following resolution was passed by 22 votes to 16: "That it be made a law of the hospital that, apart from exceptional cases to be determined by the Board, married women shall not be eligible for appointments upon the medical staff, and that women members of the staff who marry during their tenure of office be required to relinquish their position, in view of the disorganisation of the work of the hospital which may be entailed owing to the demands of their domestic duties." The resolution was proposed by a woman member of the Board, who explained that the Board had thrice considered the matter and each time had passed the resolution by a considerable majority. The subject came to a head in consequence of the marriage last year to one of the assistant surgeons of a woman medical officer who, in applying for reappointment to her office, asked for four months' leave of absence as she was expecting to have a baby. The resolution cannot become effective for 12 months, since it must be confirmed at next year's annual meeting.

Correspondence.

"Audi alteram partem."

DISTRICT HOSPITALS AND THE GENERAL PRACTITIONER.

To the Editor of THE LANCET.

SIR,—The assumption by the county councils of the management of the district hospitals is likely to lead to changes in the methods and allocation of medical practice, which seem to be in the direction of increasing specialisation, thereby limiting the usefulness of the general practitioner. A questionaire as to the departments in which general practitioners are prepared to coöperate with the activities of the county councils, brings home to every practitioner the possibility that his work with private patients will be curtailed, without any likelihood of his getting, in large centres, much, or any, of the specialist work. Might it be suggested that this is not the most promising way of making use of the general practitioner? He has, while in practice, been acquiring, not special experience in specialist treatment, but special experience in diagnosis.

His patients come to him for the relief of disease or disabilities, and it has been his business to find out whether they suffer from complaints which are trivial or temporary, or such that their treatment may be considered a matter of common knowledge, or whether they represent the beginning of more serious ill-health. If the latter, he has endeavoured with some success to learn whether such illness should be treated in hospital or at home, or by some particular specialist. He sends his patients where they are likely to get the advice and treatment which is most likely to benefit them. He does not flood the out-patient department of hospitals or the consulting rooms of specialists with phlyctenular ulcers, or cases of herpes or hydrocele but thinks himself at least equal to the receiving room offices of a hospital in deciding in what department, and from what specialist advice will be best sought. If, therefore he is asked to coöperate, use should be made of his special, rather than of his specialist experience, and he should be asked to undertake the charge of beds in the district hospital. The medical officers to the hospital should be like the surgical medical registrars in earlier days, exercising a general supervision and giving generous help to the house surgeons and house physicians who were in charge of the surgical and medical beds.

With a specialist team behind them, the general practitioners of a neighbourhood, each with a certain number of beds, would do excellent work, and be able to keep in touch with the patients they send to hospital on the one hand, and the work of specialist departments on the other.

Difficulties would undoubtedly arise as they do in teaching hospitals where certain members of the staff do better work than others, but, as in teaching hospitals, they would not be insuperable, and it would be far better for the public that the mistakes which the practitioner commits through want of care or want of knowledge should be committed in the publicity of a hospital ward, rather than in the dim light of a private bedroom.

The present system of having several hundred patients under the charge of a medical officer and two or more subordinates where the usefulness of the medical knowledge existing outside the institution is confined to a rather bitter criticism of facts distorted by the narration of ignorant patients or their friends, should be ended, and the experience of cottage hospitals, where many medical men have charge of patients, may be cited to show how much may be done in this direction to the ultimate advantage of the health of the community.

I am, Sir, yours faithfully,

ROGER N. GOODMAN.

Kingston-on-Thames, March 24th, 1930.

ÆTIOLOGY OF ENCEPHALOMYELITIS FOLLOWING SMALL-POX.

To the Editor of THE LANCET.

SIR,—The real difference of opinion between Prof. McIntosh and Dr. Scarff on the one hand and most other observers including myself on the other depends largely on the interpretation of the histological pictures in the encephalitis produced in animals by the virus of vaccinia and the disseminated encephalomyelitis following vaccination, small-pox, measles, antirabic treatment, &c. in man. Prof. McIntosh bases his view that post-vaccinal and post-smallpox encephalitis are directly due to the virus of the exanthem on the alleged similarity of the cellular reaction in the two types of encephalitis mentioned above, and his contention that the perivascular demyelination of the latter "is rather a sign of severe intoxication and is not specific" is placed on record in his last article on the subject (THE LANCET, March 22nd, p. 621). In a paper forthcoming shortly in the *Journal of Pathology and Bacteriology*, Dr. Fairbrother and I show that the cellular reaction in experimental vaccinial encephalitis is totally different from that in post-vaccinal encephalitis; moreover, in common with the majority of neuropathologists, I believe that the perivascular demyelination of the latter disease is the primary and essential feature and that the cellular response (microglial) is conditioned by the destruction of these fatty sheaths. No worker with the virus of vaccinia has up to the present time succeeded in reproducing experimentally this demyelination, and much other evidence (particularly the peculiar grouping and not infrequent familial occurrence of cases) is available to show that, while the virus undoubtedly plays some part in the ætiology of post-vaccinal encephalitis, it is not directly responsible for the condition. I maintain therefore that at the moment we are justified in seeking some additional factor, which may or may not be a virus, to account for these cases. To me the problem seems comparable with that of disseminated sclerosis following an acute infection to the direct action of which it can hardly be attributed; examples of a disseminated encephalomyelitis similar to that occurring in the course of vaccination, measles, and so forth but arising independently are known.

I am, Sir, yours faithfully,

March 25th, 1930. E. WESTON HURST.

COMPULSORY TREATMENT OF VENEREAL DISEASE.

To the Editor of THE LANCET.

SIR,—I am afraid that Miss E. O. Grant, secretary of the British Social Hygiene Council, has missed the point of my communication published in your issue of Jan. 18th (p. 159). In her letter in the following issue (p. 213) she quotes the resolutions of her executive committee, which show that the Council takes a non-committal attitude with regard to the compulsory treatment of venereal disease. They are, of course, perfectly right in taking this attitude, but I desire, with great respect, to point out that this has no bearing on my contention that the medical advisers of the Scottish corporations were not justified, in the light of recent observations, in again urging these bodies to obtain statutory powers to enforce a certain course of treatment even on defaulters, particularly in syphilis. The investigations quoted in my letter showed that there was good reason to believe that such measures were not devoid of risk, and that there was evidence that the multiple fractional doses used in modern antisyphilitic therapy have been followed by an increased incidence of vascular and visceral manifestations.

My contention is—and I feel sure it will be generally supported—that it is imperative to institute an independent inquiry to decide whether these observations are correctly interpreted. I suggested that these investigations should be on the lines so ably

followed by Bruusgaard in Oslo, and that they might be carried out under the direction of the Medical Research Council.—I am, Sir, yours faithfully,

Kenya Colony, Feb. 20th. JAMES H. SEQUEIRA.

"HEAT PYREXIA: NO HEAT STROKE: NO HEAT FEVER."

To the Editor of THE LANCET.

SIR,—Your reviewer of my essay (THE LANCET, March 8th, p. 518) writes: "It is difficult to discover the object of this little tract." Yet my first words are: "This essay is, in part, a plea for the proposition that Heat Pyrexia is the correct name for all cases of Pyrexia caused by Heat." It seems his difficulty lies in not understanding the meaning of the word pyrexia—a common error. It is the error of every English dictionary. They all assert that pyrexia is "fever." They are all wrong. *Pyrexia is not fever.* Pyrexia from the Greek *Pur* (fire) and *Echo* (I have) is a supernormal temperature of the body—above 101° F. Fever is due to an infection which decomposes albumins, producing organic poisons, and also causing heat of the body (pyrexia). Just as fire effects decomposition of fuel and also causes heat, but heat is not fire.

To some doctors the difference seems of no importance. I show by experiments on men and animals that heat will raise their temperatures (cause pyrexia) *gradually*—not by a "stroke." The London surgeon's is an example of a slowly rising case. All books on effects of heat assert heat stroke is "heat fever." I prove that it is not. I show that heat does not cause fever; that the pathology of heat pyrexia is the reverse of the pathology of fever. As described, the title of heat stroke is incorrect, its pathology erroneous, and its prophylaxis haphazard. I propose instead heat pyrexia with a correct title, a scientific pathology and a logical and effective prophylaxis.

These are my objects. The name and ideas are original. I shall be pleased to encounter any critic who will challenge my facts and arguments. Your reviewer does not even mention them, he does not understand them, and he gives your readers a false impression of my thesis. Doctors here assure me that my case is conclusive. I enclose an editorial from the *Medical Press*, August 28th, 1929, which states that I make "a powerful plea for the recognition of the proposition that heat pyrexia is the correct name for all cases of pyrexia caused by heat."

I enclose a copy of my pamphlet.

I am, Sir, yours faithfully,

C. J. MCCARTIE,

Kingstown, Ireland, March 18th. Lieut.-Col. I.M.S. (ret).

CLINICAL RESEARCH

To the Editor of THE LANCET.

SIR,—In your leading article of March 15th on Clinical Research and Experimental Medicine you say: "The work of a physician, and still more of a general practitioner, is devoted essentially and primarily to the task of diagnosis . . . . and thereafter to the treatment suitable both to the body and to the mind of that patient." I really think that this fallacy, so popular amongst the teachers of the profession, should be exploded, as I think it denotes an incorrect attitude on the part of the profession towards the general public. The medical profession exists primarily to cure disease; secondarily to prevent disease, and to prevent complications arising in disease. The study of disease itself is of importance only in so far as it is necessary or may be helpful to treatment: diagnosis comes first in order of time, but treatment in order of importance. I am not speaking of students, or the teaching of medicine, but of general practitioners and the practice of medicine.

This being the case, general practitioners deplore the fact that research in treatment is so often left to those of themselves who have the energy and assiduity to carry it out, and that they do not receive the help of those who are paid to devote their lives to research. One of the remarkable things about medicine is that there are many methods of treating the same disease, which seem equally effective; in practice some doctors pin their faith to one method and some to another. For example, it is said that the crisis in lobar pneumonia may be hastened by injections of certain vaccines, by injections of SUP 36, and by thyroid and permanganate treatment. I have used both the latter methods, and have been so pleased with the results that I should consider myself guilty of negligence if I resorted to expectant treatment in pneumonia. Would it not be possible for a committee to inquire into the various so-called "specific" methods of treating pneumonia, appoint the originator of each method as an ad hoc member, and plan a research to be carried out by a team of workers? Incidentally, the literature on pneumonia needs revision; for most of the signs take some days to develop; initial rigor is rare, herpes may appear as late as the third day, cough may be absent for several days, rusty sputum is late, and the respiration-rate only increases gradually to a maximum about the fourth or fifth day; the lung signs are late manifestations. Let us be practical and admit that in pneumonia an exact diagnosis is not possible in most cases for two, three, or four days. But I am sure that if "specific" treatment is to be any use it must be given early. What should lead us to suspect pneumonia as opposed to influenza? Pyrexia over 103°F., and tachycardia over 120. A case presenting these signs should be submitted to specific treatment; it may happen that the other signs develop as the fever subsides and are of academic interest only; or they may never occur; our diagnosis was wrong but the patient recovers. In a word, we should treat pneumonia before we diagnose it.

Take another example: the chronic rheumatic diseases are not difficult to diagnose, provided we are not given a fresh classification by every investigator. Here research has already been started on a large scale, but let me urge that the treatment be investigated on a broad basis. We have again a specific vaccine, thio-histamine injections, thyroid and manganese, physio- and electro-therapy, to mention only a few of the treatments. Summon the workers on each of these to the committee and let them plan researches along their own lines, putting the whole-time researchers at their disposal to carry out special investigations.

Let me further plead that the common diseases be investigated before the rare; and to this end that an attempt be made to discover what are the common diseases. Research in Medicine unlike Astronomy, is not an end in itself, but has one definite aim in view, and that is *treatment*.

I am, Sir, yours faithfully,

Westgate-on-Sea, March 22nd. FREWEN MOOR, M.D.

DISSEMINATED SCLEROSIS: PATHOLOGICAL CHANGES. With reference to the paper by Dr. Braxton Hicks, Dr. Hocking, and Sir James Purves-Stewart in our last issue Dr. Weston Hurst states that several months ago he had the privilege of examining some of the sections from the monkeys described. "In the course of experiments involving a full study of the brains and cords of over 250 monkeys, I have been struck" he writes, "by the rarity of spontaneous lesions in the nervous system of these animals. Nevertheless, I have on two occasions, once in an apparently quite healthy animal sacrificed as a control, observed lesions precisely similiar to those I saw in the sections Miss Chevassut brought me and to those illustrated in Fig. 4 of the paper under discussion. I do not think that the authors claim to have reproduced experimentally the histological picture of disseminated sclerosis, but in view of the importance attaching to the careful and painstaking investigation of this group of workers it seems worth while to place the above observation on record."

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

MENTAL TREATMENT BILL.

THE Mental Treatment Bill was further considered by Standing Committee A of the House of Commons on Thursday, March 20th. Mr. CECIL WILSON was in the chair.

Provisions as to Visiting Committees.

On Clause 7 Mr. GREENWOOD (Minister of Health) moved an amendment to the effect that one member at least of every subcommittee appointed under Subsection (3) for an institution should be a woman. He said that as it was intended that there should be two women appointed as members of the visiting committee it was logical that if a subcommittee was appointed under this subsection for the purpose of visiting and administering an institution that at least one woman should be a member of it.

Lieut.-Colonel FREMANTLE supported the amendment, which was agreed to.

Clause 7, as amended, was added to the Bill.

Power to Appoint a Single Medical Officer to Supervise Two or More Mental Hospitals.

On Clause 8 Miss SUSAN LAWRENCE (Parliamentary Secretary to the Ministry of Health), in reply to questions by Mr. Charles Williams, said that there was one local authority which had used this power—namely, Birmingham. Birmingham desired to have one supervising medical officer over all its asylums, and this clause afforded the opportunity to other local authorities if they chose to follow this example.

The clause, and also Clause 10 (Application of the Bill to London), were both added to the Bill.

Reorganisation of the Board of Control.

On Clause 11 Miss LAWRENCE moved at the beginning of the clause to insert the words:—

"The Board of Control shall consist of the chairman (who shall be a paid commissioner) and not more than four other commissioners, all of whom shall be paid commissioners."

She said that they were following to a certain extent the strong recommendation of the Royal Commission that there should be a small Board of Control. The Commission were profoundly impressed by the fact that the present Board, whose duties carried them over the country so frequently, were not a proper body for dealing with the administration of these matters, and they favoured a very small expert body sitting in London continuously with a system of visiting commissioners, called assistant commissioners. They pointed out that greater continuity of administration would be secured, while the Board in London would be accessible at all times which would be a great advantage. The Commission said that it might be desirable to appoint two additional medical commissioners, but on mature reflection they did not include it in their recommendations. On reflection the Ministry of Health considered that this proposal would create an efficient, workable, and good machine.

Suggested Additional Commissioners.

Lieut.-Colonel FREMANTLE moved as an amendment to the proposed amendment to insert "six" instead of "four." He explained that there were several amendments on the paper dealing with the constitution of the Board of Control, of which this was the first. The proposal was that the Board should consist of six persons, plus the chairman. It was also suggested in the amendments that there should be two medical commissioners, one having experience of institutional administration, and the other possessing special scientific qualifications. In the first two amendments it was proposed that the extra two members of the Board should be a layman and a laywoman. That was not a professional recommendation; it was made from the point of view of the House of Commons and the public, and from the experience of the present Board of Control. But the question of mental disease was, after all, a medical question, and therefore at least two out of the proposed six members of the Board, or seven including the chairman, should be medical. That was the minimum. A further amendment suggested that one of the commissioners should be a medical woman. This would be a good thing in view of the fact that they were dealing in this legislation, roughly speaking, with an equal number of women. It was not an answer to say that there were not sufficient women doctors available at the present time. It was quite true that there were not sufficient women doctors to do the work that was and would be required of them, but there were sufficient women doctors to enable them to have a woman doctor as one of the Commissioners. He would like to put this forward on the principle of the working of the Board. It was true, as the Royal Commission had stated, that the Board of Control had been much divided between their duties of inspection and their office work, and there was a constant change in their personnel. There was not sufficient continuity in their decisions and administration. I would be better to have more continuity, but the continuity proposed in the Bill was going too far. It was proposed that there should be four commissioners and one chairman, who would practically be glued to their seats in Whitehall and practically unable to do any visiting at all.

Miss LAWRENCE: No, no.

Lieut.-Colonel FREMANTLE said that what he had said was quite true. The commissioners would have their work cut out in Whitehall, and he did not believe that it would be possible for the four commissioners, plus the chairman, to do anything but very occasional visiting. It would be found, as with Government machinery all over the world, that their work would constantly increase year by year. There was no medical administration on which it was more important for the officials carrying out the work in Whitehall to be in constant and vital touch with the work which they were supervising in the provinces. That was the advantage of the Board as it existed at the present time. He believed the two extra unpaid commissioners who he suggested should be appointed would do much to safeguard the interests and obtain the confidence of the patients and the public in the proposed revised constitution of the Board of Control. He begged the Committee to consider what was going to be the future of the Board of Control, and how they were to be kept alive, and how they could answer the objections—often unreasonable objections—which were made against them in the daily newspapers. They were charged with not understanding their subject and the real human needs of the people in the asylums. This was an argument in favour of further strengthening them, as was proposed in his amendment.

Mr. RHYS DAVIES said that perhaps Colonel FREMANTLE would inform the Committee why, if these two extra lay commissioners were appointed as he suggested, they should be asked to do the job for nothing, whereas he (Colonel Fremantle) had an amendment which would come later which proposed that medical men on the Board of Control should be paid?

Captain GUNSTON said they should be quite frank on this matter. There were, no doubt, many people in this country who were suspicious of the expert; they were suspicious of the medical person, and very often of the legal person. They felt that they should have on this Board lay representatives who would be unpaid, and who would have probably given up their life to this sort of work. Such members would be very valuable. On the question of the status of the members of the Board, he could not help feeling that if they appointed "other commissioners" to travel about the country for the purpose of inspection, the heads of the various hospitals would not look upon them as possessing quite the same status as the members of the present Board. In spite of what Miss Lawrence had said, he did not think that the four senior commissioners would have very much time to do much visiting. If they appointed two unpaid persons who would act as a liaison between the Board of Control and the people visited, they would keep up the status of the visiting commissioners and maintain their touch with the Board in London.

Mr. KINLEY hoped that the Minister of Health would not acept the suggestion to appoint two extra lay commissioners.

Ineffective Administrative Machinery.

Miss LAWRENCE said that the point of view represented by Colonel Fremantle was no doubt an important one. It went, in fact, to the root of the provisions of the Bill in regard to machinery. If she were to summarise the Report of the Royal Commission with regard to the Board of Control it would be this, that though everyone was grateful for the services of the individuals on the Board of Control, the machine itself was as bad an administrative machine as one could imagine. The desire was now to reorganise the Board of Control and get rid of its anomalous state. She was very anxious that no one should suppose that she was blaming the commissioners; her complaint was against the machine which the Government desired to make comparable with the existing machinery of the Ministry of Health and the other Civil Service departments. That was to say, they would have the chief officials engaged mainly in Whitehall but performing visitation wherever the circumstances of the case seemed to them to demand it; secondly, they would have assisting them expert assistant visiting commissioners. Below the assistant commissioners there would be a staff of inspectors. The Board of Control would thus be brought into line with the other main departments of public health administration. It would not be suggested

that the officials charged with maternity questions, Sir George Newman and the chief officials of the Ministry, should run about the country all day long; that was not the business of chief officers.

Lieut.-Colonel RUGGLES-BRISE said that Parliament would be making a great mistake if they tried to set up a machine closely following on all the other lines of bureaucratic machinery to which they were accustomed, and which might be quite good in many other ways. A special measure of elasticity was necessary in this connexion, because the machine of the Board of Control had the power of dealing with matters affecting the liberty of the subject, a power to which there was no analogy in any other machine or department of State.

After further debate,

Amateur Bureaucracy.

Mr. GREENWOOD said that the proposal in the Bill was to make the machine of the Board of Control effective. The proposal of the amendments was to extend bureaucracy.

Lieut.-Colonel FREMANTLE: Anti-bureaucracy.

Mr. GREENWOOD said he would have thought that the worst kind of bureaucracy was amateur bureaucracy. After going into this matter with great care the Royal Commission felt that what was wanted was a small expert body of people with medical and legal knowledge and administrative experience. That was being provided for in the Bill. The addition of more lay members of the Board would not get rid of the Minister of Health's official responsibility for being the spokesman of the lay mind and of public opinion in these matters. He found it difficult to understand any real justification for either increasing the size of the Board or for adding unpaid members to it. He hoped, therefore, that the Committee would agree to Clause 11 and to the amendments which he (Mr. Greenwood) had put down designed to secure more effective working, and which had been put down after discussion with the Treasury.

After further debate,

Lieut.-Colonel FREMANTLE said that unless the Minister was prepared to reconsider this matter it would be raised again both in and out of Parliament during the remaining stages of the Bill.

Mr. GREENWOOD said that he was sorry that Colonel Fremantle had sounded so fierce when he expressed the desire to fight this matter through. There was very little on which to fight in view of the specific recommendation of the Royal Commission.

The Committee having rejected Colonel Fremantle's amendment to increase the number of the Board from four to six by 19 votes to 8, Miss Lawrence's original amendment was agreed to.

"Senior Commissioners."

Miss LAWRENCE moved an amendment to the effect that the members of the Board of Control should be styled "senior commissioners." She explained that this was the first of a set of amendments, the object of which was to meet the proposal that the senior commissioners, who were themselves appointed by the Crown, should appoint assistant commissioners to carry out the work of visitation. That work would be directly under the senior commissioners.

Lieut.-Colonel FREMANTLE said that he and his colleagues were not opposed to this proposal, though they were to some of its implications. He would reserve comment on that, however, until a later stage.

The amendment was agreed to.

Lieut.-Colonel FREMANTLE moved an amendment to provide that there should be at least two medical commissioners, and that one should be a woman registered medical practitioner. He said that if the Board of Control were going to be mainly glued to their office seats in Whitehall it would obviously be necessary that they should be possessed of the kind of experience necessary for them to fulfil their functions. There were two entirely different lines of work in the medical profession; one was institutional and the other scientific. The two did not work freely together in the higher offices. A man was devoted to scientific work or administration. Very few men in this country could combine the two. The Royal Commission had abundant evidence which they felt justified in bringing into their conclusions that it might be desirable to have two medical commissioners. It was quite open, without any expansion of the Board, to say that two out of the five commissioners should be medical. He excluded the chairman and the legal commissioner; but of the remaining three his amendment proposed that two should be medical and one a woman practitioner. This was put forward strongly by the Medical Women's Federation and various bodies speaking for women doctors, and by some of the mental welfare societies as well. He did not think it was put forward by the medical superintendents and the societies representing them, as they were a male body, but the proposal was supported by women generally, and especially by medical women.

Miss LAWRENCE said that they did not want to make the Board too big. The Government were proposing one more member than the Royal Commission recommended, and they thought that on balance, having regard to efficiency and expense, that that was enough, and they left the fourth commissioner unearmarked. That commissioner might be any person of merit suitable for the position.

The amendment was negatived.

The Committee adjourned.

The Mental Treatment Bill was further considered by Standing Committee A of the House of Commons on Tuesday, March 25th. Mr. CECIL WILSON was in the chair.

Reorganisation of the Board of Control.

On Clause 11 Lieut.-Colonel FREMANTLE moved an amendment to provide that all the commissioners of the Board of Control should be appointed by the Crown on the recommendation of the Lord Chancellor or the Minister of Health in the manner proposed in regard to the five senior commissioners. He said that it was proposed that the junior commissioners should be appointed by the senior commissioners. This would mean that when these officials visited the various mental institutions of the country they would carry less weight than if they had been appointed by the Crown. This would be a disadvantage, because it was desirable that the commissioners who visited these institutions should possess the greatest amount of authority possible.

Miss LAWRENCE (Parliamentary Secretary to the Ministry of Health) said that this amendment struck at the whole plan of reorganisation of the Board of Control proposed in the Bill. The idea was to secure a small body of senior administrative officers who would be appointed by the Crown, and that there should be a number of junior commissioners, but nevertheless important officials, who would work under the Board exactly as was the case in any well-conducted Civil Service department. The present Board of Control had been found to be an unwieldy body. She could not accept the amendment.

Dr. VERNON DAVIES said that it was not desired to interfere with the departmental control of the Minister. The whole point was the status of these junior commissioners in the eyes of the heads of the mental institutions which they would have to inspect. Some of those superintendents were most eminent alienists and psychologists of world-wide repute, and they ought to be visited by officials of somewhat similar status.

Dr. MORRIS-JONES said that he did not think there were any insuperable difficulties in the way of accepting this amendment. Mental disease was not in the same category as other branches of medicine, and these junior commissioners would be called upon to meet men in the very front rank of the medical profession in respect of their knowledge and experience of mental disease. There could be no doubt that they would suffer in prestige if it was known that they were appointed by the senior commissioners, and not by the Crown. He thought that the amendment would strengthen the Bill.

Dr. VERNON DAVIES appealed again to the Minister to accept the amendment.

Mr. GREENWOOD said that the logic of this amendment was that everyone who did the work of visiting institutions should be appointed direct by the Crown. He thought that no case had been made out.

The amendment was negatived by 17 votes to 7.

Senior Commissioners.

Miss LAWRENCE moved an amendment providing that no person should be appointed a legal senior commissioner unless either: (1) he was a practising barrister or solicitor of at least five years' standing; or (2) he was a commissioner, other than a senior commissioner, and was, at the date when he was appointed such a commissioner, a practising barrister or solicitor of at least five years' standing; and no person should be appointed a medical senior commissioner unless he was a registered medical practitioner of at least five years' standing.

Dr. MORRIS-JONES moved an amendment to the amendment providing that no medical senior commissioner should be appointed unless he was a registered practitioner of at least seven years' standing. He said that it was quite wrong that it should be possible for a young man of 26, with only five years' experience, should be qualified for appointment as a senior medical commissioner of the Board of Control.

Miss LAWRENCE, in resisting the amendment, said that she regarded it as a frivolous one.

Dr. MORRIS-JONES protested against the remark of Miss Lawrence. He was very anxious to see the Bill become law.

The amendment was negatived.

Dr. VERNON DAVIES moved an amendment to the amendment that no medical commissioner should be appointed

who had less than five years' experience of psychological medicine.

Miss LAWRENCE said that she was afraid that this amendment would narrow the field of choice too much. There were very distinguished superintendents of hospitals of vast experience who had not had this amount of practice in psychology. It might therefore exclude people of great professional standing. She would refer the point to the Minister, but she could not accept the amendment at that stage.

Dr. MORRIS-JONES said he hoped that the amendment would not be accepted. It was too drastic.

The amendment was withdrawn.

Miss LAWRENCE'S original amendment was then agreed to.

Unpaid Commissioners.

Miss LAWRENCE moved an amendment providing that after the commencement of the Act (1) no further unpaid commissioners should be appointed; (2) the paid commissioners, other than senior commissioners, should be appointed, subject to the approval of the Minister, by the Board of Control and any commissioners so appointed.

Lieut.-Colonel FREMANTLE expressed regret at the abolition of the unpaid commissioners. Such action, he said, would lower the status of the Board.

Miss LAWRENCE said that she could not give a promise on the matter, but she would consult with the Minister in order to see whether a place could not be found for unpaid commissioners among the officers of the Board, but not among the senior commissioners.

Miss PICTON-TURBERVILLE moved an amendment to provide that the officers of the Board should include a woman.

Miss LAWRENCE said that this point would be met on the Report stage.

Lieut.-Colonel FREMANTLE moved that the salary of no commissioner should exceed £3000 per annum. He said that he moved this in order that the Minister might make a statement on the subject.

Miss LAWRENCE assured Colonel Fremantle that the Minister was fully alive to the necessity for giving an adequate, honourable, and attractive salary to the people who would do this important work.

The amendment was negatived.

Clause 11 was added to the Bill.

Clause 12 (Administrative provisions) and Clause 13 (Provision as to the exercise of powers of visitation and inspection) were also added to the Bill.

Transfer of Certain Power from the Minister of Health to the Board of Control.

On Clause 14 Mr. WOMERSLEY moved the following proviso:—

"Any local authority dissatisfied with any decision of the Board of Control affecting such authority, or with the refusal or withholding of any approval of the Board of Control for which such authority had applied, may appeal to the Minister of Health and any decision or approval given by the Minister on such appeal shall be equivalent to the decision or approval of the Board of Control."

Mr. GREENWOOD, in resisting the amendment, said that it introduced unnecessary machinery into the Bill. No question of general policy was involved under this clause. If such a question arose it would certainly be dealt with by the Minister of Health. The new unification of procedure would bring the Board of Control more directly into contact with the local authorities, but this amendment would drive in a wedge and set the Minister against the Board of Control. That, he was sure, was not the desire of the Committee.

Mr. WOMERSLEY said that he was unrepentent about this matter, and the more he heard it discussed the more he believed in the soundness of the amendment.

The amendment was rejected by 15 votes to 9.

Clause 14 was added to the Bill.

The Committee adjourned.

SHOPS (HOURS OF EMPLOYMENT) BILL.

In the House of Commons on Friday, March 21st, Mr. FREDERICK HALL, in moving the second reading of the Shops (Hours of Employment) Bill, said that the measure provided for a 48-hours week, exclusive of meal times. The shops would be able to keep open for practically the same hours as at present.

Mr. R. A. TAYLOR seconded the motion.

Sir GERVAIS RENTOUL moved the following amendment:—

"That this House declines to give a Second Reading to a Bill that would adversely affect the livelihood of a large number of shopkeepers and shop assistants, would inevitably add to the cost of living, would give rise to widespread evasion, and would cause great practical difficulties of administration."

Captain CAZALET seconded the amendment.

After further debate,

Dr. ETHEL BENTHAM said that for many years she had been a panel practitioner, having on her list large numbers of men and women engaged in all London trades, and she could say that the health of the shop assistants compared extremely badly with that of people in almost any other trade of which she knew anything. Shop assistants suffered a great deal from varicose veins, flat-foot, and all the disabling things which made life a misery. They aged very early, and broke down very early. With regard to women the matter was even more important and vital. She had no hesitation in saying that the real reasons for these excessively bad conditions of health were to be found in the excessively long hours worked in shops, and the bad ventilation of the premises. There was a greater necessity for protection for this class of worker than for any other within her experience, except perhaps miners.

After further debate,

Mr. A. SHORT (Under Secretary for the Home Office) said that in the view of the Government there was a case for legislation in this connexion, but the information at their disposal was not sufficient to enable them to deal with the situation. They therefore proposed, if the promoters of the Bill were willing, that if the House gave this Bill a second reading an inquiry should be set up on the subject, and the Home Secretary was willing to consult the promoters as to the form and the nature of that inquiry. This was not a device for delay.

Sir G. RENTOUL withdrew his amendment, and the second reading of the Bill was agreed to.

ARMY MEDICAL SERVICE.

On Monday, March 24th, on the motion that the House go into Committee on the Army Estimates for 1930,

Mr. T. SHAW (Secretary of State for War) expressed his regret that there was a shortage of medical men who were prepared to undertake a career in the army. Although the physical tests had been scaled down, the army as a whole was still under establishment. Out of a total of 72,268 recruits who presented themselves for enlistment in 1929, 28,131, or 39 per cent., were accepted, which meant that 61 out of 100 were rejected even on the standards now insisted on. Of the rejections, 91 per cent. were on physical and medical grounds. The lowering of the dental standard, which had previously been tried in Scotland, was extended to England and Northern Ireland, and by that means an additional 2384 recruits were enlisted for all arms. In December, 1928, the height standard for the infantry lines was lowered to 5 feet 2 inches, and 907 young men of suitable physical development were enlisted. By those measures 3219 recruits were accepted who would otherwise have been lost to the service. Without them, the intake for 1929 would have been only 24,840. The physical condition of the young men who presented themselves was a very serious matter, and he was asking his staff to investigate, so far as they could, how far that physical deterioration was due to industrial depression or to other causes.

WORKMEN'S COMPENSATION (SILICOSIS) BILL.

In the House of Lords on Tuesday, March 25th, Earl RUSSELL introduced the Workmen's Compensation (Silicosis) Bill, which was read a first time.

HOUSE OF COMMONS.

THURSDAY, MARCH 20TH.

Teaching of Hygiene in Elementary Schools.

Sir JOHN GANZONI asked the President of the Board of Education whether he was aware that the chief medical officer of the Board had asked the school medical officers throughout the country to submit to him a report upon the teaching of hygiene in public elementary schools; and if the right hon. gentleman would give directions that in future the local education authority and not its officers should be requested to furnish such reports.—Sir CHARLES TREVELYAN replied: There has been some misunderstanding in regard to the circular referred to. It has, however, been made clear by a subsequent communication to the school medical officers that the inquiry was concerned with the medical effect of the teaching of hygiene in the schools. It has been a practice of many years' standing for the chief medical officer to communicate directly with his colleagues in the school medical service in regard to questions on which their professional opinion is desired.

The Ringlemann Smoke Test.

Dr. HASTINGS asked the Minister of Health whether he would be prepared to approve by-laws under Section 2, Subsections (1) and (2), of the Smoke Abatement Act, 1926, defining noxious smoke as smoke of some specified density as measured by the Ringlemann test, which had been used for many years in the United States of America.—Mr.

GREENWOOD replied: I am aware that in some places in the United States this test has been used, but no local authority in this country has proposed to embody it in by-laws under the Act of 1926 and, as at present advised, I do not think it is suitable for that purpose.

Cardiff City Council and the Schick Test.

Mr. FREEMAN asked the Minister of Health whether his attention had been called to a proposal of the Cardiff city council to perform the so-called Schick test and inoculate 10,000 healthy children who were under 10 years of age; and, seeing that it was impossible to give an assurance that the immunisation of such a number of children would greatly reduce the incidence of diphtheria and that no compensation was payable, would he see that parents and guardians were informed in writing at least one month before such operations were allowed to take place, and permission in writing was obtained to proceed with the operation on behalf of each child beforehand.—Mr. GREENWOOD replied: I am aware that this council has offered to protect about 10,000 children against diphtheria by a process of immunisation. I understand that it is the practice of the council to allow parents a reasonable period in which to decide whether they will accept the offer, but that it is not administratively convenient to give as long notice as one month. Permission in writing is obtained from the parent or guardian of each child before it is treated under the arrangements made by the council.

Medical Officers and Municipal Disabilities.

Lieut.-Colonel FREMANTLE asked the Minister of Health if he would introduce a short indemnifying Bill to exempt present sitting medical members of county and county borough councils from their disabilities to act as from April 1st next during the remainder of their present period of office, pending the reconsideration or reorganisation of the methods of payment to medical practitioners for minor medical services rendered on behalf of local authorities in the course of their private practice.—Mr. GREENWOOD replied: I regret that I am not able to comply with the suggestion.

Lieut.-Colonel FREMANTLE asked the Minister of Health if he was aware that in rural parts of the country generally, and particularly in such rural counties as the county of Huntingdon, all practising medical practitioners were rendered ineligible for service as members of county councils by the provisions of the Local Government Act, 1929, and that, therefore, such councils as desire to have medical members, whether coöpted or elected, for their public health, maternity and child welfare, and Midwives Acts, mental deficiency and other committees, were unable to obtain them; and would he take this question into consideration.—Mr. GREENWOOD replied: Legislation would be required to deal with the matter raised by the hon. and gallant Member, and I am afraid that I can give no undertaking as to such legislation.

Lieut.-Colonel FREMANTLE: If a one-clause Bill is introduced to remove any inconvenience temporarily, and enable these officers to carry out their duties during the remainder of their term of office, which is obviously desired by the electorate, will the right hon. gentleman try to give facilities for its passage?

Mr. GREENWOOD: There are only 11 days to go before the new Act comes into operation, and the local authorities have already made their arrangements.

Lieut.-Colonel FREMANTLE: A great deal can be done in that time.

The Royal Veterinary College.

Captain CROOKSHANK asked the Minister of Agriculture if he could make any statement regarding the Royal Veterinary College.—Mr. BUXTON replied: The Development Commissioners have recommended, and the Treasury has approved the recommendation, that, subject to certain conditions, a grant not exceeding £100,000, on a pound-for-pound basis, should be made to the Governors of the Royal Veterinary College for the reconstruction of the College on the present site.

The Hospital at Kuala Lumpur.

Mr. WELLOCK asked the Under Secretary of State for the Colonies when it was proposed to complete the hospital at Kuala Lumpur; and what sum had been allocated to this purpose in the current estimates by the Government of Malaya.—Dr. SHIELS replied: I understand that plans for the new hospital are now under consideration, and though it is possible that the work of construction may begin in 1931, no date has been fixed for completion. No provision has been made in the current estimates.

General Medical Council and Indian Degrees.

Mr. FREEMAN asked the Secretary of State for India whether his attention had been called to the fact that Indian medical degrees were not recognised by the British Medical Council; and if he proposed to take any action in the matter.—Mr. WEDGWOOD BENN replied: I am aware that the General Medical Council have withheld recognition of Indian degrees. I am in communication with the Government of India on the subject, and am not at the moment prepared to make any statement. I need hardly say that I am most anxious that a settlement should be reached.

Medical Officers in the Navy.

Dr. VERNON DAVIES asked the First Lord of the Admiralty if he would give, for each of the last 10 years for which statistics were available, the total number of medical officers in the navy, and the number who joined and the number who left the service in each year.—Mr. AMMON (Parliamentary Secretary to the Admiralty) replied: The figures are as follows:—

Year.	Total medical officers.	Entered.	Retired, &c.	Year.	Total medical officers.	Entered.	Retired, &c.
1920	454	24	29	1925	390	29	32
1921	429	12	37	1926	390	30	30
1922	415	24	38	1927	381	37	46
1923	392	14	37	1928	390	45	36
1924	393	33	32	1929	372	19	37

The total numbers of medical officers are those arrived at by the end of each year. Temporary surgeons entered during the war have not been included, and none are now serving.

Medical Officers in the Royal Air Force.

Dr. VERNON DAVIES asked the Under Secretary of State for Air if he would give for each of the last ten years for which statistics were available the total number of medical officers in the service, the number who joined, and the number who left the service in each year.—Mr. MONTAGUE replied: The following are the figures required in respect of the years for which statistics are available:—

Year beginning April 1st.	Strength beginning of year.	Joined during year.	Left during year.	Year beginning April 1st.	Strength beginning of year.	Joined during year.	Left during year.
1921	119	32	18	1926	188	21	25
1922	133	45	13	1927	184	29	20
1923	165	29	15	1928	193	17	20
1924	179	27	19	1929	190	17*	20*
1925	187	22	21				

* Figures to date, March 19th, 1930.

MONDAY, MARCH 24TH.

Indian Medical Degrees.

Lieut.-Colonel FREMANTLE asked the Secretary of State for India if his attention had been drawn to the action of the Indian university authorities which prevented the General Medical Council from being in a position to guarantee the standard of Indian medical degrees and to recognise them for registration on the general medical register; if he was aware that such action would bar future holders of these degrees from the main field of medical practice outside India; and if he would take steps to ensure a reasonable settlement of the question at an early date.

Major GRAHAM POLE asked the Secretary of State for India what action the Government of India proposed to take following the refusal of the British Medical Council to extend recognition to Indian medical degrees; and whether it was now the intention of the Government of India to introduce into the assembly during the present session legislation embodying proposals for the early establishment of an All-India Medical Council.—Mr. WEDGWOOD BENN replied: I explained the general position in reply to Mr. Freeman on March 20th. I am aware that the decision of the General Medical Council will prevent holders of Indian medical degrees gained during the period of non-recognition from practising in this country. The Government of India informed me on Jan. 6th that they did not expect to be able to introduce legislation for the establishment of a General Medical Council in India during the present session of the Indian Legislative Assembly, and I have not heard from them since on this point.

Lieut.-Colonel FREMANTLE asked if the right hon. gentleman was taking steps to ask the Government of India if they would agree provisionally to make arrangements so that Indian gentlemen who were qualifying for practice during the next six or twelve months might not be finally and for the rest of their lives debarred from practice?

Mr. BENN said that those were naturally matters on which he was consulting the Government of India.

Dr. VERNON DAVIES asked if Mr. BENN was aware that the cause of the dispute was the alleged statement that the training of the Indian medical gentlemen was not considered sufficient.

Mr. BENN said that it would not be suitable, in reply to a supplementary question, to deal with the whole question of medical training.

TUESDAY, MARCH 25TH.

Indian Medical Research Institute.

Major GRAHAM POLE asked the Secretary of State for India what was the present position in respect of the proposal of the Government of India to remove the Indian Central Medical Research Institute to Dehra Dun.—Mr. WEDGWOOD BENN replied: I am sending my hon. friend a copy of a debate in the Indian Legislative Assembly on Feb. 8th from which he will see that the decision to locate the Institute at Dehra Dun is to be reconsidered.

Obituary.

JOHN GREGORY WHITE, M.D. EDIN.

Dr. Gregory White, so long a leading practitioner in Bournemouth, died at Aspley Guise, Bedfordshire, on Feb. 11th, at the advanced age of 92. An Edinburgh student in the 'fifties he qualified in 1862, and held resident appointments at the Leith Casualty and Fever Hospitals before settling at Bournemouth, where for many years he had a large and varied practice. The district was then developing rapidly as a winter resort for invalids, among whom Dr. White found scope for his sagacity and practical skill in treatment, combined with the kindliness and patience to which one of his colleagues bears witness. On his retirement in 1907 he went to live at Aspley Guise, where he had inherited property, leaving his practice to his son, Dr. Edward How White. His wide intellectual interests acquired for him a large circle of friends in Bedfordshire, among whom his death is greatly regretted; and there are still many among the senior members of the profession, and of the older residents of Bournemouth, who cherish his memory with affection.

RICHARD HERBERT VERCOE, B.A. CAMB., M.R.C.S. ENG., D.P.H.

Dr. Vercoe, who died at Chelmsford on March 23rd in his fiftieth year, was medical officer of health and school medical officer to the borough. After graduating at Cambridge, Dr. Vercoe continued his medical studies at University College, London, and took the conjoint qualification in 1910. He then held a series of resident appointments at the Prince of Wales's Hospital, Tottenham, and was clinical assistant at the Brompton Hospital. During the war he served in the R.A.M.C., gaining special experience of trench fever, on which he contributed an appendix to Byam's monograph. After taking the diploma in public health at Oxford he was appointed school medical officer at Colchester, where he made a study of the health of school-children in relation to their position in the family which excited a lively correspondence in our own columns. At Chelmsford much of his spare time was occupied with an investigation into the incidence of rheumatism in the school population and the relative importance of heredity and home environment. The mayor of Chelmsford has testified to his value and efficiency as a health officer.

ENLARGEMENT OF CHESTERFIELD HOSPITAL.—The waiting-list being now in excess of 500 it has been decided to erect a new ward at a cost, including equipment, of about £17,000. The basement is to be converted into an eye, ear, and throat department with a small theatre The money for these extensions is in hand, thanks to a legacy of £10,000 and the receipt of £1514 from a carnival.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At recent examinations the following candidates passed in the undermentioned subjects:—

Surgery.—J. Gordon, T. C. Keble, A. R. Madden, and C. J. Nicol, St. Mary's Hosp.; S. E. Paterson, Edinburgh; A. Scher, London Hosp.; E. M. M. Shaw, Westminster Hosp.; C. Skinner, Guy's Hosp.; and L. J. P. Soromenho, Lisbon and St. Bart.'s Hosp.

Medicine.—T. Chandrasekharan, Madras and Manchester; H. C. Halge, St. Mary's Hosp.; A. Hamid, Middlesex Hosp.; E. G. Nair, Madras and Manchester; R. Nandlal, Birmingham; M. S. Rappoport, London Hosp.; T. Singh, Charing Cross Hosp.; and G. K. Wilsker, Liege and Royal Free Hospital.

Forensic Medicine.—K. Graftdyk, Leeds; H. C. Halge, St. Mary's Hosp.; A. Hamid, Middlesex Hosp.; B. T. W. Harvey, London Hosp.; E. Jacomb, Charing Cross Hosp.; M. S. Rappoport, London Hosp.; and T. Singh, Charing Cross Hosp.

Midwifery.—E. A. Freywirth, Heidelberg and Westminster Hosp.; K. Graftdyk, Leeds; J. M. L. Love, St. Mary's Hosp.; L. R. C. Rose, Manchester; Grantley Smith, Bristol and Guy's Hosp.; and L. C. H. Sykes, Leeds.

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery: T. Chandrasekharan, J. Gordon, K. Graftdyk, H. C. Halge, A. Hamid, B. T. W. Harvey, R. Nandlal, M. S. Rappoport, A. Scher, T. Singh, C. Skinner, and L. J. P. Soromenho.

UNIVERSITY OF LIVERPOOL.—At recent examinations the following candidates were successful:—

M.CH.ORTH.

M. G. Kini and D. W. L. Parker.

FINAL EXAMINATION FOR M.B. & CH.B.

Part I. (1923 regulations).—A. M. Russell.

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.

Part A.—A. J. Galustian, J. M. Grieve, G. W. Phillips, R. Y. Stones, and T. M. Tso.

Part B.—A. J. Galustian, J. M. Grieve, M. J. McHugh, G. W. Phillips, R. Y. Stones, and T. M. Tso.

DIPLOMA IN PUBLIC HEALTH.

Part I.—J. H. St. B. Crosby, H. R. Dugdale, H. P. Fowler, J. D. A. Gray, E. Hughes, H. S. Lawrence, J. S. Mather, E. S. R. Menon, J. W. Pickup, W. J. Pierce, J. H. Pottinger, and Nora M. Wilson.

DIPLOMA IN TROPICAL MEDICINE.

G. R. Baxter, C. J. Boyd, J. A. K. Brown, A. Cathcart, T. T. M. Chen, Ariel R. S. Deacon, J. H. Dobbin, F. D. Gillespie, S. C. Grant, R. Green, M. L. Gulatee, R. A. Heatley, B. N. Khanna, D. K. L. Lindsay, J. E. D. Mendis, M. B. Mody, G. B. Mohile, S. Narain, C. J. Poh, L. Sumitra, and T. Wilson.

DIPLOMA IN TROPICAL HYGIENE.

R. A. Anderson, C. G. Booker, W. A. Bullen, R. Krishna, C. N. Latham, J. E. McMahon, and A. Reid.

UNIVERSITY OF DUBLIN.—At recent examinations in the School of Physic, Trinity College, Dublin, the following candidates were successful:—

M.D.

Wentworth Alexander Taylor.

M.CH.

Gibbon FitzGibbon.

FINAL MEDICAL EXAMINATION FOR M.B., B.CH. & B.A.O.

Part I., Materia Medica, Medical Jurisprudence, Pathology, &c.—*J. A. Wallace, E. F. Burton, P. C. Cosgrove, J. B. Fleming, T. M. R. Ahern, N. H. Leask, H. B. Wright, D. H. S. Boyd, W. A. Hill, H. J. Garland, J. G. Wilson, H. S. Mason, and H. St. G. Smith.

Part II., Medicine.—W. I. Chapman, John Willoughby, Samuel Levy, F. P. FitzGerald, and P. L. O'Neill. *Surgery.*—F. O. Pilkington, R. T. O'Shea, R. E. Hemphill, F. M. Lyons, Arnold Rose, G. F. West, Reginald Bowesman, Patrick O'Shea, E. F. St. J. Lyburn, and Annie E. Thompson *Midwifery.*—*S. H. Moore, *N. A. Kinnear, D. J. O'Ryan, T. A. Bouchier-Hayes, W. A. Robinson, C. H. Adderley, E. S. Duthie, C. H. Hutchinson, C. M. Elliott, Charles Ryan, J. B. Scott, and H. W. Dalton.

DIPLOMA IN GYNÆCOLOGY AND OBSTETRICS.

H. M. Fisher, E. T. Mankabadi, Lin Yang, and M. H. Rashwan.

* Passed on high marks.

MANOR HOUSE ORTHOPÆDIC HOSPITAL.—The first sod of the site of the new Manor House Hospital at Golders Green has been cut. The buildings and their equipment will cost £250,000, all of which, with the exception of £22,000, is in hand, and when completed there will be accommodation for 350 patients; there are at present 105 beds. The first of the new permanent buildings will cost £20,600. The hospital is supported by the Industrial Orthopædic Society for the benefit of industrial workers.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.—The annual congress to be held at the House of the Royal Society of Medicine on Thursday, Friday, and Saturday, April 3rd, 4th, and 5th, under the presidency of Mr. Leslie Paton, is a Jubilee meeting, as the Society was founded in 1880. The following interesting programme has been arranged:

Thursday, 10 A.M. to 12.30 P.M.: Presidential Address, Presentation of the Nettleship Medal. Papers: Mr. E. Treacher Collins, The Harderian Gland, Xerophthalmia, Vitamin A Deficiency, Keratomalacia. Mr. Aykroyd, Night-blindness due to Vitamin Deficiency. Dr. Collier, Ocular Paralyses. Mr. Chavasse, An Examination of Existing Theories of Concomitant Convergent Strabismus, together with Some Observations on the Antiquity of Stereopsis. 2.30 P.M.: Discussion—Disorders of Secretion of the Endocrine Glands Associated with Eye Diseases. Openers: Mr. J. H. Fisher, Prof. H. MacLean, Dr. W. Clark Souter, and Prof. Dodds. The following will take part in the discussion: Messrs. A. W. Ormond, C. Goulden, and others. 9 P.M.: Reception by the President and Council of the Royal College of Surgeons at the College, Lincoln's Inn Fields, W.C.

Friday, 9.30 A.M. to 12.30 P.M.: Papers—Mr. G. F. Alexander, (1) Discission of After-Cataract. (2) An Operation for Aggravated Ectropion. Prof. Van der Hoeve, The Eye and Amnion Bands. Prof. G. Marquez, La Theorie Stereoscopique der Anaglyphes. Dr. Gordon Holmes, Spasm of Fixation. Mr. Ridley, Experimental Investigation into the Intra-Ocular Pressure and the Drainage of the Aqueous. Mr. Doggart, Ocular Rosacea. Mr. Greeves, X Ray Applications in Superficial Keratitis. 2.30 P.M.: Papers—Mr. Juler, Some Cases of Damage to Descemet's Endothelium. Mr. Tudor Thomas, Transplantation of the Cornea (with Demonstration). Dr. Mulock Houwer, The Ætiology of Retention Cysts of the Fornix Conjunctivæ. Mr. Duke-Elder, New Observations on the Physiological Action of the Extra-Ocular Muscles. 4.30 P.M.: Tea. 5 P.M.: The Bowman Lecture—Sir Arthur Keith, The Genius of Bowman. 7.30 for 8 P.M.: Banquet at the Fishmongers Hall, London Bridge, E.C., by courtesy of the Prime Warden and Court. The price of the ticket is £1 15*s.*, and cheques should be sent to Mr. M. H. Whiting, 51, Wimpole-street, London, W.

Saturday, 9.30 A.M.: Papers—Dr. Rosa Ford, The Advantage of Using the Elliot Scotometer at Two Metres. Dr. Adie, Acute Retrobulbar Neuritis in Disseminated Sclerosis. Sir Arnold Lawson, A Further Note on a Case of Bilateral Symmetrical Detachment of the Retina with 6/5 Vision. Mr. Bernard Cridland, Comments on the Certified Causes of Blindness. Miss Ida Mann, The Reptilian Iris. Mr. Basil Graves, Spasmodic Ectropion. 12 noon: Annual Meeting of the Society. 12.30 P.M.: Meeting of British Ophthalmologists. Afternoon: Visit to the Zoological Gardens. Demonstration of Pythons' Eyes with the Slit-Lamp, by Miss Mann. 4.15 P.M.: Tea in the Fellows' Pavilion.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An election of three Fellows into the Council will take place at the College in July, the vacancies being occasioned by the retirement in rotation of Mr. R. P. Rowlands, Sir Percy Sargent, and Mr. Victor Bonney, who are all eligible for re-election.

UNIVERSITY OF MANCHESTER.—At a recent examination the following candidates were successful:—

DIPLOMA IN PUBLIC HEALTH.

Part II.—Arnold Brown and J. S. Sewell.

A consultative committee on cancer research, consisting of representatives of the University and of the Manchester Committee on Cancer, including the Christie Hospital and the Radium Institute, has been established. The work will be done at the University laboratories, and will be directed and controlled by the Consultative Committee. Dr. C. C. Twort, who has been working under the direction of the Manchester Committee on Cancer, has been appointed as Director of the Department of Cancer Research.

Mr. John Morley has been appointed lecturer in systematic surgery.

UNIVERSITY OF LEEDS.—The Council has decided to institute a readership in clinical chemical pathology, and Dr. F. S. Fowweather, at present lecturer in chemical pathology, is to be promoted to it. Mr. B. L. Jeaffreson has been appointed tutor in obstetrics and gynæcology, and Dr. J. J. Thomson demonstrator in pathology and bacteriology.

UNIVERSITY OF SHEFFIELD.—The Council of the University has appointed Mr. Graham Simpson to be professor of surgery in succession to Prof. A. M. Connell, who retires from office on March 31st. Mr. Simpson is Senior Surgeon to the Sheffield Royal Hospital.

DEPARTMENT OF HEALTH FOR SCOTLAND.—Dr. Peter L. McKinlay has been appointed a medical officer in this department. A graduate of Glasgow University he was at one time assistant medical statistician to the Scottish Committee upon Problems of Child-life, and for the last five years has been medical statistician on the staff of the Medical Research Council. He has also acted as visiting lecturer to the Division of Vital Statistics and Epidemiology in the London School of Hygiene and Tropical Medicine, and as secretary to the committee on miners' nystagmus.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The meeting of the Maternity and Child Welfare Group, fixed for to-day, Friday, March 28th, is postponed until further notice.

ROYAL STATISTICAL SOCIETY.—The Council of this society will again, in 1931, award a Frances Wood memorial prize, value £30, for the best investigation, on statistical lines, of any problem affecting the economic or social conditions of the wage-earning classes.

CITY OF LONDON MATERNITY HOSPITAL.—The Lord Mayor, who last week presided in state over the annual court of governors, stated that the training school had taught 9355 midwives and 15,824 maternity nurses. The rebuilding of the nurses' home, at a cost of £30,000, is said to be overdue.

NORTH MIDDLESEX HOSPITAL.—Last week Mr. Greenwood (Minister of Health) opened the new radium department of this Edmonton hospital, and laid the foundation-stone of an extension of the nurses' home. He remarked that the Local Government Act which is about to come into operation had been passed "with the general approval of public opinion."

POST-GRADUATE COURSES AT DUBLIN.—Arrangements are being made for a three weeks' post-graduate course, on the same lines as in former years, to be held at Trinity College, Dublin, from Sept. 15th to Oct. 4th. A limited number of members of the class can be accommodated in College rooms, or, in the case of women, at Trinity Hall.

CROWDED MENTAL HOSPITALS.—The Corporation of Southend have decided to send the excess of the borough's mental patients to mental hospitals at Exeter and Newcastle-on-Tyne. This action has been caused by the refusal of the committee of the Essex Mental Hospitals to receive more than 175 patients from Southend. The corporation applied to authorities all over the country in the hope of obtaining accommodation, but of the 20 that replied only Exeter and Newcastle had vacancies.

ANCOATS HOSPITAL EXTENSION.—At the centenary, two years ago, of this hospital in the heart of the industrial centre of Manchester, the accommodation was described as "hopelessly inadequate." But the appeal then launched for £100,000 for extensions and improvements has produced only £33,000, and the scheme has therefore had to be seriously modified, and one new block of four wards only will be built. There are at present 114 beds, which it had been hoped to increase to 200, though at least 300 are needed. The number of operations has almost doubled since 1925.

PUBLIC ASSISTANCE IN THE COUNTY OF LONDON.—In accordance with schemes prepared by the Public Assistance and Public Health Committees, the London County Council has allocated the 12 poor-law hospitals which it will take over on April 1st to the five areas into which the capital has been divided for the purpose. In addition, the Council will administer the Queen's Hospital, Sidcup, and Tooting Home Hospital, neither of which is at present in use as a hospital. The Public Health Committee record their belief that "the present available accommodation for the acute sick will be inadequate for future needs."

"HYGIENIC RIGHTEOUSNESS."—At the annual meeting last week of the Royal Hospital, Wolverhampton, Mr. N. B. Graham, the chairman, suggested that patients and prospective patients should be gathered together in the out-patients' hall and instructed in "hygienic righteousness." Last year the average stay in the hospital (5019 patients) was 14·7 days, the cost per head £6 12*s.* 8½*d.*, an increase of 3*s.* 2½*d.*, and per occupied bed £163 15*s.* 11*d.*, an increase of more than £24 over two years ago. The cost per head at the Women's Hospital was £8 18*s.* 5½*d.*, and per occupied bed £225 4*s.* 5½*d.*, a slight increase.

GERMAN SPA CONGRESS.—The Balneological Society of Berlin is arranging to hold its forty-fifth Congress in Bad Elster, Saxony, from April 9th to 13th, under the presidency of Prof. Dietrich. The chief themes for discussion will be the action of iron in medicinal waters, the examination of peat and mud baths, and the dietetics of health resorts. Members will have an opportunity of visiting the University clinics in Leipzig before the congress, and the radium baths at Brambach and Oberschlema afterwards, as well as the sanatoria at Reiboldsgrün and Carolagrün. There is no membership fee and non-members are welcome. Further information from Dr. Max Hirsch, Berlin, W.35, Steglitzerstr. 66.

MANCHESTER STUDENTS' RAG.—The Shrove Tuesday "Rag" of the students of the University yielded £10,927, somewhat less than last year's figure, which was £11,043. Street collections raised £4680, and the sale of the "Rag Rag" £5400. Cheques for £1000 apiece have been sent to the Dental Charities' Fund, to the Cancer Research Appeal Fund, and to the Manchester Northern Hospital for Women and Children; the balance goes to the Manchester and Salford Medical Charities' Fund.

"PLYMOUTH ROYAL HOSPITAL."—It was formally announced at the annual meeting of the South Devon and East Cornwall Hospital that it has now been decided that this institution, the Central, and Royal Albert Hospitals, are to be amalgamated under the above title. A Royal Charter is to be applied for. The South Devon and East Cornwall Hospital is in debt to the bank to the extent of £22,000, and it appears that there is not a grain of radium for hospital use in Plymouth. The South Devon last year spent £1000 on treating motor accidents and recovered only £86.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, April 1st.—5.30 P.M., ORTHOPÆDICS. (Cases at 4.30 P.M.)

WEDNESDAY.—5 P.M., HISTORY OF MEDICINE. Papers: Prof. Tom Hare: Two XVIth Century Veterinary Books. Dr. A. P. Cawadias: Epidauros; Some New Photographic Documents. Demonstration: Dr. G. C. Peachey: Frank Buckland at Home. 8.30 P.M., ANÆSTHETICS. Reception at the Wellcome Historical Medical Museum. During the evening the Rt. Hon. Lord Dawson of Penn will give an address on Henry Hill Hickman. 8.30 P.M., SURGERY. Discussion on Amputations and their Relation to the Artificial Limb. Opener: Mr. C. Max Page. Followed by Mr. P. Jenner Verrall, Dr. R. D. Langdale-Kelham, Captain A. R. Maxwell and others. Illustrative cases will be shown.

THURSDAY.—8.30 P.M., TROPICAL DISEASES. Paper: Dr. G. W. Theobald: Women, Malaria, and Quinine. OBSTETRICS AND GYNÆCOLOGY. Members of this Section are specially invited to attend.

TUBERCULOSIS ASSOCIATION, Provincial Meeting at Oxford.

THURSDAY, April 3rd.—2.30 P.M., The Examination of Contacts. Speakers: Dr. G. Jessel, Dr. N. Bardswell, and Dr. W. Burton Wood.

FRIDAY.—10 A.M., Oleothorax. Speaker: Dr. Gilbert. Demonstrations of Apparatus. 2 P.M., The Economics of Tuberculosis Settlements. Speakers: Dr. P. C. Varrier-Jones, Dr. J. B. McDougall.

SATURDAY.—10 A.M. (1) Annual General Meeting. (2) Preliminary Reports on Experiences with Turtle-vaccine Therapy. Dr. Fowler and others. (3) Demonstration of Apparatus. The meetings will be held in the Pathological lecture room of the Dunn Laboratory.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, March 31st, to SATURDAY, April 5th.—PRINCE OF WALES'S HOSPITAL, Tottenham, N. Special one week's course in Gastro-Enterology, occupying from 10.30 to 5.30 each day with clinical lectures, demonstrations, operations.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Special Post-graduate Course in Medicine, Surgery, and Gynæcology. Operations and lecture-demonstrations in the Wards and Out-Patient departments.—WEST END HOSPITAL FOR NERVOUS DISEASES, 73, Welbeck-street, W. Special Post-graduate Course of lectures and clinical demonstrations. Daily at 5 P.M.—Further particulars from the Fellowship of Medicine.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, March 31st.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY, April 1st.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Nose, Throat, and Ear Clinics. Operations.

FRIDAY.—10.30 A.M.: Throat, Nose, and Ear Clinics. 2.30 to 5 P.M.: Surgical, Medical, and Children's Diseases. Clinics. Operations.

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.

TUESDAY, April 1st.—5 P.M., Mr. R. Christie-Brown: The Treatment of Disproportion.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL.

FRIDAY, April 4th.—4 P.M., Mr. A. Lowndes Yates: Acute and Subacute Labyrinthitis.

ROYAL DENTAL HOSPITAL OF LONDON, Leicester-square, W.C.

WEDNESDAY, April 2nd.—6 P.M., Mr. F. P. de Caux: Recent Advances in the Methods of Administering N_2O in the Surgery of the Mouth.

ANCOATS HOSPITAL POST-GRADUATE COURSE, Mill-street, Manchester.

THURSDAY, April 3rd.—4.15 P.M., Dr. N. Kletz: Affections of the Kidneys with Special Reference to Nephritis.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, April 1st.—4.15 P.M., Mr. P. R. Wrigley: The Investigation and Treatment of Enlargement of the Prostate.

FRIDAY.—4.15 P.M., Mr. J. P. Buckley: Demonstration of Surgical Cases.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.

WEDNESDAY, April 2nd.—4.15 P.M. (Victoria Infirmary), Dr. R. M. Marshall: Medical Cases.

Appointments.

Certifying Surgeons under the Factory and Workshop Acts: SMART, J., M.B., Ch.B. Glasg. (Dunoon, Argyll); and DUCKWORTH, H. L. D., M.B., B.Ch. Dub. (Ross, Hereford).

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne, District Infirmary.—Res. Surg. O. At rate of £200.

Barnsley, Beckett Hospital and Dispensary.—Cas. O. £250.

Bath Royal United Hospital.—H.S. At rate of £150. Also H.P. £120.

Bedford County Hospital.—H.S. At rate of £175.

Belgrave Hospital for Children, 1, Clapham-road, S.W.—H.S. Also Asst. H.P. Each at rate of £100.

Blackburn, Royal Infirmary.—4th H.S. £150–£200.

Cambridge, Addenbrooke's Hospital.—H.S. At rate of £130.

Charing Cross Hospital, W.C.—Asst. Physician.

Connaught Hospital, Orford-road, E.—Sen. Res. H.S. At rate of £150. Also Jun. Res. H.S. At rate of £100.

Derby, Bretby Hall Orthopædic Hospital, nr. Burton-on-Trent. Asst. M.O. At rate of £150.

Derby, Derbyshire, Royal Infirmary.—H.P. £150.

Doncaster Royal Infirmary.—Hon. Phys. and Path. Hon. Ear, Nose and Throat S. Also Two Hon. Anæsthetists.

Downpatrick, Down Mental Hospital.—Jun. Asst. M.O. £300.

Dundee Royal Infirmary.—Two Asst. Visiting M.O.'s

Durham County Hospital.—Jun. H.S. £120.

Evelina Hospital for Children, Southwark, S.E.—H.S. At rate of £150.

Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—H.S. At rate of £135.

Guildford, Royal Surrey County Hospital.—H.S. £150.

Hertford County Hospital.—Res. Surg. O. At rate of £250.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. £50 for six months. Jun. H.P. At rate of £100.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Res. M.O. Also H.P. At rate of £150 and £100 respectively.

Hospital for Sick Children, Great Ormond-street, W.C.—Res. M.O. for County Branch Hospital, Tadworth, Surrey. At rate of £250.

Hove Hospital, Sackville-road.—Res. M.O. £150.

Hove, Lady Chichester Hospital.—Jun. H.P. At rate of £50.

Hull Royal Infirmary.—H.S. Also Cas. H.S. At rate of £150 and £130 respectively.

Ilford Borough.—Part-time Asst. M.O.H. for Infant Welfare Centres. £1 11*s.* 6*d.* per session.

Lincoln County Hospital.—Jun. H.S. At rate of £150.

Liverpool, Royal Children's Hospital.—Res. H.S. At rate of £60.

London Jewish Hospital, Stepney Green, E.—Med. Reg. and Out-patient Asst. At rate of £150. Also Clin. Asst.

London Lock Hospital, 91, Dean-street, W.—1st and 2nd H.S.'s. Each at rate of £200.

London Temperance Hospital, Hampstead-road, N.—Res. M.O. Also H.P. At rate of £175 and £100 respectively.

Manchester Babies' Hospital, Burnage-lane, Levenshulme.—Jun. Res. M.O. At rate of £50.

Manchester Ear Hospital, Grosvenor-square, All Saints.—H.S. At rate of £150.

Manchester Royal Infirmary.—H.S. to Special Departments. At rate of £50.

Manchester, Victoria Memorial Jewish Hospital, Cheetham.—Hon. Radiologist.

Metropolitan Hospital, Kingsland-road, E.—Sen. H.P., Sen. H.S., Jun. H.P., Jun. H.S. Also Two Cas. O.'s. All at rate of £100.

Norwich, Norfolk and Norwich Hospital.—H.S. to Special Depts. Also Cas.O. and H.S. Each £120.

Paddington Green Children's Hospital, London, W.—H.P. and H.S. Each at rate of £150.

Preston and County of Lancaster Royal Infirmary.—Pathologist. £1000.

Prince of Wales's General Hospital, Tottenham, N.—Hon. Phys. Also Sen. H.P., Sen. H.S., and Special H.S. Each at rate of £120. Also Jun. H.P., and Two Jun. H.S.'s. Each at rate of £90.

Princess Louise Kensington Hospital for Children, North Kensington.—H.P. At rate of £75.

Queen Mary's Hospital for the East End, E.—House Anæsthetist and H.P. £120.

Rampton State Institution for Mental Defectives, near Retford, Notts.—4th M.O. £547 10*s.*

Royal Air Force Medical Service.—Vacancies for Medical Officers.

Royal Chest Hospital, City-road, E.C.—Res. M.O. Also H.P. At rate of £150 and £100 respectively.

Royal Dental Hospital of London, 32 Leicester-square, W.C.—Hon. Asst. Anæsthetist.

Royal Free Hospital, Gray's Inn-road, W.C.—Cas. O. At rate of £150. Also Res. Anæsthetist.

Royal Northern Hospital, Holloway-road, N.—Pathologist. £750. Also Asst. Pathologist. £500.

St. Andrew's Hospital, Dollis Hill, N.W.—Sen. and Jun. Res. M.O.'s.

St. Bartholomew's Hospital, E.C.—Three Asst. Dental Surgeons.

St. Mary's Hospital for Women and Children, Plaistow, E.—Asst. Res. M.O. At rate of £120. Also Clin. Asst. for Medical Out-patients Dept.

Salford Royal Hospital.—H.P. Also Cas. H.S. Each at rate of £125.

Shanghai Municipal Council, P.H. Dept.—Asst. Pathologist. 650 Taels per mensem.

Southampton Borough Hospital.—Res. Med. Supt. £600.

Southampton, Royal South Hants and Southampton Hospital.—Cas. O. At rate of £130 to £160.

Surrey Local and Medical and Panel Committee.—Secretary.

University College Hospital Medical School, W.C.—Chair of Bacteriology. £1200.

Wakefield, Clayton Hospital.—Two H.S.'s. Each at rate of £150.

Walsall General Hospital.—Cas. H.S. At rate of £120.

Western Ophthalmic Hospital, Marylebone-road, N.W.—Sen. Res. H.S. Also Jun. H.S. At rate of £150 and £100 respectively.

Westminster Hospital, Broad Sanctuary, S.W.—Hon. Administrator of Anæsthetics.

The Home Secretary is considering the appointment of an additional Medical Referee under the Workmen's Compensation Act, 1925, for the Districts of the Barry and Cardiff County Courts (Circuit No. 24). Applications should reach the Private Secretary, Home Office, Whitehall, London, S.W. not later than April 12th.

Births, Marriages, and Deaths.

BIRTHS.

MONTEITH.—At 7, South-street, St. Andrews, Fife, on March 20th, to Margaret (*née* Evans), the wife of W. B. R. Monteith, F.R.C.S. Ed.—a daughter.

STEVENSON.—On March 20th, at The White House, Victoria-road, Colchester, the wife of Major W. B. Stevenson, R.A.M.C., of a daughter.

SUMMERSKILL.—On March 15th, at Bentinck-street, W., the wife of Dr. W. H. Summerskill, of a son.

MARRIAGES.

CROSSKEY—WEAVER.—On March 19th, at St. Oswald's Church, Hinstock, Market Drayton, Lionel Howard, M.B., Ch.B., of Kidderminster, to Emily Booth, second daughter of Mr. and Mrs. J. B. Weaver, of Hinstock.

DEATHS.

FAGAN.—On March 17th, at Graigue-a-Vernie, Portarlington, Sir John Fagan, D.L., F.R.C.S.I., aged 86.

FORAN.—On March 22nd, at Eastbourne, John Cyril Foran, J.P., L.D.S., in his 78th year.

JENNINGS.—On March 13th, Charles Egerton Jennings, M.D., F.R.C.S., of Filands, Malmesbury.

NIXON.—On March 19th, Constantia Adriana, elder daughter of Dr. and Mrs. J. A. Nixon, of Lansdown-place, Clifton, Bristol, aged 4 years and 8 months.

MONTEITH.—On 22nd March, at 7, South-street, St. Andrews, Margaret Du Boulay Evans, beloved wife of W. B. R. Monteith, F.R.C.S. Ed.

REDDING.—On March 18th, at Guy's Hospital, John Magnus Redding, F.R.C.S. Eng., of Portland-place, W., aged 41.

VERCOE.—On March 22nd, suddenly, Richard Herbert Vercoe, B.A., M.R.C.S., L.R.C.P., D.P.H., Medical Officer of Health for the Borough of Chelmsford, in his 46th year.

WHITMORE.—On March 19th, William Beach Whitmore, M.B. Lond., of Thurloe-square, South Kensington, aged 83.

WILLIAMS.—On March 22nd, after a few hours illness, Raymond Pearse, only and dearly loved son of T. Pearse Williams, M.D., M.R.C.P., and Madge Williams, of 62, Leith Mansions, W.9, aged 8¼ years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

HEALTH AND CLEANLINESS.

Dame Louise McIlroy, speaking at a luncheon given by the Health and Cleanliness Council on March 19th, said that it was impossible to make people moral by Act of Parliament, but at least it was possible to make them clean. The root of all the excellent work in the child welfare campaign was cleanliness; it had led to a reduction of infant mortality by almost half the figure at which it had stood a few years ago. She urged all her hearers to join the campaign against long skirts, lest, sweeping the floor like their Victorian grandmothers, women should again help to disseminate dirt and disease. In maternity work many women were still the victims of puerperal septicæmia, and sepsis was due to matter out of place—to dirt. We should pin our faith not to antiseptics but to the cleansing properties of soap and water, and to the protective mechanisms of the human organism.

Dr. G. F. Buchan, chairman of the Council, in replying to Dame Louise, said that health and cleanliness were indissolubly associated. The basis of all rules for the prevention of disease and the preservation of health was cleanliness; sanitation aimed at making and keeping our towns and houses clean. One of the attributes of beauty was cleanliness, and just as the æsthetic pleasure the Romans took in their baths led them to provide an excellent water-supply, so a wholesome vanity and the satisfaction inherent in a sense of cleanliness might lead to valuable reforms in our own day. It was necessary to stimulate a public consciousness of cleanliness. The most dangerous forms of dirt were bacteria; they were constantly disseminated by our fellow men and ourselves, and frequent baths could help to prevent the spread of infection. The death-rate from typhoid had been reduced enormously by improved sanitation during the last 50 years, by means of which we now enjoyed a clean water-supply. Public swimming baths were often a source of infection; no person should enter such baths without previously washing thoroughly with soap and water. Persons with discharges from ears or eyes should be forbidden to use them.

A HOSPITAL IN THE ARCTIC.

THE Archdeacon of the Arctic, the Ven. A. L. Fleming, is trying to raise money to establish a hospital at Lake Harbour, Baffin Land, at the eastern side of the district of Franklin. It was hoped that enough money might be raised to endow a bed in this hospital, to be dedicated to "the memory of Sir John Franklin and his companions, Sir John Richardson, Sir George Back, Lieutenant Kendall, &c.," but the number of surviving relatives is too few for them to provide the necessary sum.

The fate of the *Erebus* and *Terror* expedition (1845) so overshadows the results of Sir John Franklin's earlier explorations (1819–22 and 1925–27) that it is forgotten what important additions they made to the map of Canada. The former "barren lands" of the first explorers have now a continually increasing population of miners, traders, airplane and railway employees, as well as settlers with their families. Transport is facilitated by air or steamboat; even in winter communication is carried on by airplanes. The inhabitants of some of these regions will benefit by the Lake Harbour Hospital. North-Western Canada is provided with a hospital at Aklarvik, Mackenzie River, and the nursing staff for North-Eastern Canada have volunteered and are ready to go as soon as there is a building for them to work in. Cheques may be made payable to the "Arctic Hospital Fund," and sent to Miss Gell, Harewood House, Keyhaven, Milford-on-Sea, Hants.

OFFICIAL YEAR BOOK OF LEARNED SOCIETIES.

FOR 46 years past Messrs. Charles Griffin and Co., Ltd., have compiled from official sources a record of the work done in science, literature, and art during the preceding twelvemonth, and have issued it in the Year Book of the Scientific and Learned Societies of Great Britain and Ireland. The present volume is dated 1929 on the cover (although it might fairly be imprinted 1930); it contains 413 pages, is well printed and indexed, and is issued at 18*s.* The publisher's threat to limit the scope of the year book by inserting lists, not of papers read but only those which are published by the societies in question, which was to have taken effect this year, has been again postponed; but unless their appeal for more general support is answered it seems that the 47th volume will be issued in the less complete form. The publisher sees in this one more illustration of the tendency of the times to work less and play more, and we hope his foreboding will be disappointed. The volume is a very useful one for reference, and should be on the shelves of every public library.